DOCUMENT RESUME

ED 444 596 IR 020 261

TITLE	Sketches of Innovators in Education: A Collection of Articles on Teaching with Technology by Indiana State University Faculty. Second Edition.
INSTITUTION	Indiana State Univ., Terre Haute.
PUB DATE	2000-00-00
NOTE	46p.
PUB TYPE	Collected Works - General (020) -- Reports - Descriptive (141)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	College Faculty; *Computer Assisted Instruction; Computer Uses in Education; Distance Education; Educational Technology; Higher Education; *Instructional Design; *Instructional Development; *Instructional Innovation; Teacher Attitudes; *Teaching Methods
IDENTIFIERS	*Indiana State University

ABSTRACT

In this collection of articles, Indiana State University faculty members discuss their experiences in developing courses and teaching with educational technologies. The purposes of this publication are to share creative approaches to teaching and learning, and to acknowledge and support the efforts of Indiana State University faculty members who are embracing new technologies and audiences of students. The articles, grouped by school of discipline--College of Arts and Sciences, School of Business, School of Education, School of Health and Human Performance, and School of Nursing, School of Technology--offer a representative sampling of the changes occurring in on-campus and distance courses offered by Indiana State University. Each article contains tips, teaching strategies, and lessons learned--all gleaned from personal experiences with technology-assisted teaching. This edition appends a special section, "The Student's Viewpoint," providing excerpts of student responses to a survey on their opinions regarding the use of educational technologies in their courses. (AEF)

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Sketches Innovators Education

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A Collection of Articles on Teaching with Technology by Indiana State University Faculty

IR020261

Sketches
of Innovators in Education

A Collection of Articles on Teaching with Technology
by Indiana State University Faculty

Second editon (2000)

I feel the future of education *must*
be based on educational technologies.
My role as a resource in technological
solutions for manufacturing companies
requires me to maintain a high level
of understanding and skill in all of
the latest technologies.
As a student, I feel that continuous
exposure to these technologies
heightens my skill level and enables
me to become more valuable to
my clients, my organization, and myself.

Lawrence Hornibrook
Doctoral Student
Ph.D. in Technology Management
Indiana State University

Additional student acknowledgments and comments are located
in Appendix A—*The Student's Viewpoint.*

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Sketches of Innovators in Education is a collection of articles in which Indiana State University faculty members discuss their experiences developing courses and teaching with educational technologies. The purposes of this publication are to share creative approaches to teaching and learning, and to acknowledge and support the efforts of Indiana State University faculty members who are embracing new technologies and audiences of students.

The articles in this collection offer a representative sampling of the changes occurring in on-campus and distance courses offered by Indiana State University. Each article is sprinkled with practical tips, teaching strategies, and lessons learned—all gleaned from personal experiences using technology to teach. Each contributor shines a different light on the challenges and rewards encountered, thus offering viewpoints as diverse as the contributors themselves and their disciplines. However, all share one common thread—the ability and willingness to rethink their teaching and to *learn by doing and sharing.*

To support their efforts and our common vision of quality in higher education, Indiana State University offers the Course Transformation Academy (CTA), a faculty development program. Each CTA workshop offers faculty members an opportunity to enrich their teaching through re-examination of teaching techniques, hands-on opportunities to use educational technologies, and consultations with library, media specialists, and instructional designers.

We are pleased that this edition of *Sketches* includes a special section—*The Student's Viewpoint* (appendix A). What can be a better tribute than the appreciation expressed by these students who benefit daily from our faculty's efforts, enthusiasm, and ability to teach with technology?

As you read, please feel free to contact my office if you wish more information on the Course Transformation Academy or the University's Distance Education Program.

Nancy Franklin, Director
Distance Education and Faculty Development
Indiana State University
(800) 234-1639
extfrank@ruby.indstate.edu

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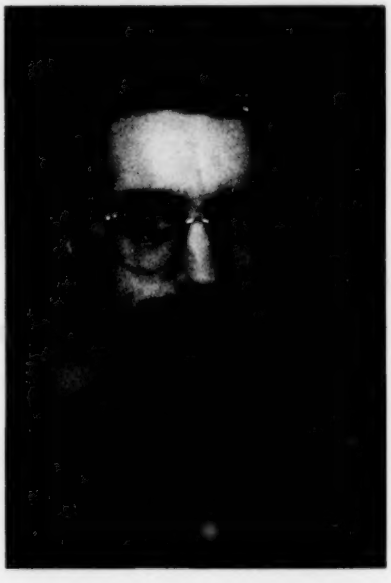
College of Arts and Sciences



Thomas Derrick, Ph.D.
Professor of English

Courses

• Bibliography and Research Methods in English

Feedback and Feedforward in Web-Mediated Learning

CATS on a Hot Silicon Roof

"Formative, mid-course feedback at the classroom level, especially if it is repeated at regular intervals," write Angelo and Cross in their practical handbook, *Classroom Assessment Techniques* (1993), "helps students and teachers clarify their goals and assess their progress towards them while there is still time to make changes based on that feedback."

This advice highlights the difference between administering individual tests of progress in mastering content or taking group surveys of a whole class's dispositions toward learning. Summative judgments are derived from checks on knowledge and skill whereas the formative evaluations come from anonymous polls whose results are publicly interpreted. If we focus on the formative kind of assessment techniques, current pedagogical wisdom says that you should find out as soon as possible where learners are coming from, not just in subject familiarity and performance abilities but also in goal orientation and cultural setting.

Angelo and Cross are calculating time in the 13-16 week span of academic term calendars, and they advise that multiple progress assessments be given early and often in the term. Online courses tick to a different clock. Another unit of time is the number of days or hours between an assessment and the first opportunity to think about what the results mean. The nominal speed of computer-mediated technology beats almost any teacher's ability to correct mistakes on paper and deliver, or feedback, the results at the next class. We say "feedback" because computer programmers popularized that term, not for reasons concerning the imagery of consumption/regurgitation.

The other half of this feedback cycle is the speculation about what to do next, called "feedforward" by one pioneer educator who fancied cybernetic jargon enough to playfully turn it back on itself (Richards 1955, p.119). The sooner a person receives a response to a learning assessment, the sooner he or she—teacher or student—can begin to complete the cycle of feedforward and feedback. Teachers also fit in this loop because classroom assessment techniques let them learn what worked and how well. They can, therefore, adjust future assignments. Recognition of the variety of feedforward is an instructor's chance to tune the feedback.

Some of the various topics to ask about include:

• Distribution of creativity: In how many different ways did people handle the assignment?

• Developmental level: In what categories of probable achievement did individuals cluster?

• Assumptions: Which implicit principles were guiding students' learning?

The assessment-maker who looks ahead and inquires about learning-centered activities and explanations needs time to interpret the replies and feedback comments about the learning process.

Classroom assessments work perfectly well on paper, and timely reporting is possible with diligence. The issue I want to examine is whether there are any special effects on the social climate for learning when regular classroom assessments are reported and interpreted online.

Eight Days a Week

The teaching situation that prompts this paper was Bibliography and Research Methods in English (ENG 600), a graduate-level course in graduate research methods for English literature. The 16-week semester was divided into as many three-hour blocks of human activity, followed by 165 intervening hours for possible online contacts. Only an efficiency engineer or time-on-taskmaster would examine an academic week this way. My ten students, who were also teaching and taking courses, might describe the English 600 course as one intense Thursday night followed by "Thank God It's Friday," two days of week-end collapse, and four days sliding toward the next class meeting.

This course fit halfway between a subject-centered and learner-centered design. The inherited goals were: teaching new graduate students how to do advanced literary research; introducing them to the traditions of book making, both physical and conceptual (this subdiscipline is known as critical bibliography or textual criticism); and overseeing the writing of a

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graduate-level seminar paper, a documented interpretation of some piece of literature or literary issue. Forty percent of the course grade was assigned to this essay, which was described as a mini-version of a master's thesis—in format, documentary depth, and interpretive quality. You could see anxiety rustling like a thunderstorm before a wheat field when the full force of the requirements was recognized.

These students belonged to a diverse group of learners who met each other in graduate courses, teaching assistant orientation, the hallways, and the mail room, but who did not necessarily know each others' literary concerns or professional goals. A course completely organized around individual progress would provide initial diagnosis of research readiness, library skills, scholarly attitude, and literary backgrounds. Then developmental stages would be devised to allow people to progress at different paces and, on particular paths, toward the three course goals. A compromise course was taken between a content-driven and a personally-adjusted curriculum. However, to follow this decision, and to mediate between reaction-based feedback on mastery of required research methods and speculative feedforward on a graduate student's own professional progress, I chose courseware that would help create a sense of community while providing learning energy to overcome the inertia of those six days between class meetings.

Of Course, Information

Version 2.0 of Blackboard Systems' courseware offered a standard array of features suitable for my main purpose of building a class community among familiar people. Without knowing HTML, students could compose personal pages; send and receive non-proprietary e-mail; and see and/or print course information, announcements, and classroom assessments. I did not use the quiz generating and grading functions except on one night of a computer laboratory when I composed an anonymous survey, preferring to pass out hard copy and then report the hand-compiled results of these surveys in self-made Web pages.

Modest knowledge of HTML coding allows you to customize some pages, by placing tables and images but not the fixed menu-structure (*announcements, course and staff information, course documents, assignments, communication, external links, student tools*). This small investment of time is worthwhile, not so much for modification of templates as for file management. Because of the indivisible database for CourseInfo, a teacher cannot upload and separately edit HTML pages if the whole document is fed directly into the templates. I much preferred to store stand-alone Web pages on a different server and call them with <a href>s from within the courseware. This technique can be observed in the *Course Documents* menu by visitors who log in to the converted version (from 2.0 to 3.1) as follows:

http://online.indstate.edu/courses/ENG600/index.html
username=guest
password=guest

Click on the *Course Documents*. Look for the document named *Sample Code*, which shows a screen from the instructor's control panel and a brief set of notes. Privacy considerations were programmed to block guest access to personal pages and the *Discussion Board*. Regular students could edit their own *Who Am I* page, with picture and favorite links. They were also invited to describe their approaches to research in terms of a metaphor. That is, when searching for information on our class excursions to the library, they likened this experience to that of a gold miner in an overworked mine, a riverboat pilot, a topiary tree shaper, the Hindu goddess Kali, a detective/digger-upper of truth, playwright, cake baker, and archeologist!

While exploring the *Course Documents*, you can check out the ten different surveys by clicking on the *Survey Results* folder. Another source for this material is http://isu.indstate.edu/ilnprof/ENG600/surveys99.htm

Any one of these surveys will indicate some principles (•) and implications (>) behind classroom assessment techniques and feedforward thinking:

• Regular nongraded, anonymous assessments of the type, "what did you learn? what do you not sufficiently understand?" put learning closer to the center of a skills-based course.

> Each student's self-report, whether accurate or not, is a reminder that anyone can signal that it is time to move on or dwell further on a procedure.

>Coverage of course material will be slower than in a content-centered curriculum, in which the "train leaves the station no matter how many people are on board."

• The teacher's comments on the general level of progress, and thoughts about the next steps, improve readiness for subsequent class meetings.

> This consolidation of effort is especially relevant for once-a-week classes or true distance education situations (where students log in at different times from off-campus).

• The more often a common question is posed over successive surveys, the more able can a teacher guess when a major perception has been reached.

This last principle can be noticed in the surveys posted on September 3, 9, 16, 23, and 30. I repeatedly asked for a question. However I received, at first, a set of vague statements with a few shallow inquiries. The ability to ask an informed, deep question was the unstated challenge. Perhaps my accumulated commentary on the lack of real questions and the strategy of only responding to the adequate ones led to an increase in the direct inquiries, which I praised in the September 23 report. From October 4 to 28, I ramped up to the next perceptual stage: definition. The same survey rhythm of repeatedly asking for definitions and commenting on their strengths and weaknesses was an effective way to reinforce a skill that would be required in the final paper.

This reassignment of the CourseInfo quiz function into an assessment feedback/feedforward cycle was not time consuming, though a little cumbersome. The task of compiling the paper surveys and writing the commentary took about an hour a week. The electronic form required a little more effort since the version 2.0 courseware was not designed for easy access to anonymous polls with free-response answers. (It was best suited for multiple-choice, one-correct-answer tests taken by identified students.)

The courseware was well set up for collecting usage statistics. Information about how many people accessed what features, at what time of day or week, could be graphically

displayed. This data set mainly served my evaluation plan as a reality check. I could compare what students reported on the mid-term and final course evaluations with the more or less actual numbers—skewed a little because my own and the system administrator's course maintenance access, making up eight percent of the total number, was counted with all the rest of the 3,100 hits. This level of detail would take longer to do on paper, and probably would never be attempted by busy teachers without assistance.

Of Course, Evaluations

The weekly polling of learning progress does more than inform the teacher's short-term planning. The process also builds a sense of community, an expectation that both students and teacher inhabit a learning environment. Two factors about technology enhancement affect the quality of this shared space: ease of access and trust. Mid-term and final course assessments took the pulse of the social organism at both of the pressure points. (The full reports for each evaluation are kept in the *Course Documents* section of the English 600 Web site.)

The mid-term assessment checked on the same four dimensions used by the Lilly Project for Enhancing the First-Year Experience, because graduate students beginning their program were merely starting farther up the scale than freshman. Both kinds of newcomers were likely to need attention to: academic concerns; personal directions; social connections; and cultural space. A bipolar, subdivided scale from *Strongly Agree* to *Strongly Disagree* was converted to numerical values, with four being the high and one the low.

The evaluation occurred on the sixth week, after regular work in groups, posting of topics and metaphors, and only sporadic contributions on the *Discussion Board*. About four of these graduate students were either inexperienced at word-processing or Internet access, and yet the highest mean (3.64) came from the item "I can easily access the course Web site." Although CourseInfo does not seem any more difficult than running a Web browser, beginners overwhelmed with other obligations can opt out of the technology. They didn't. Some of the reasons, I suspect, are that the course work exposed them to computer-assisted searching, curiosity about the results of classroom assessments were only available online, and they could ask for help from classmates. Seeing the technological experience of at least half of this small class (then numbering a dozen students), I deliberately did not take class time to instruct them. Handouts with screen-shots plus word-of-mouth advice from fellow students seemed sufficient to rate a moderately high mean (3.27) on the item, "I feel I am part of a supportive social group in class."

Having tried without great success in the previous year to instigate asynchronous discussion at the start of this same course, I did not advocate this kind of communication. My hypothesis should be tested in other online learning environments when students regularly meet face-to-face:

> *Creating the conditions for student-to-student social exchange and group work before you invite online dialogue establishes the trust needed for genuine interaction.*

In other words, you should not expect academic strangers to work together verbally unless they know each other's moves, personalities, habits of mind. I suspected, and at the final evaluation inquired about, that even the personal home pages did not reveal identity as much as group interactions and general discussion.

The final evaluation sought to check on: usage patterns and preferences; value perceived from computer-accessed information; the friendliness of the online environment; and free responses to before-and-after attitudes about academic computing, its challenges/benefits, whether courseware should be continued in English 600, and whether these graduate students might try it in their own teaching. Compiled and converted responses are supplied on the Web site, and a link to the comparable CourseInfo data is added.

Half the students reportedly checked the Web site two or three times per week, mostly on Mondays and Tuesdays before the Thursday night class. The official statistics, however, located the most hits on the two days immediately before class, perhaps indicating students' reluctance to admit that they put off the checking of announcements and assignments until the last chance. The internal record keeping tallied pretty well with the student self-report of destinations. *Announcements* led the list, but this top-choice could be invalidated by the fact that announcements always appear on the opening page. There was one discrepancy between report and official record: students apparently underrated the number of times they went to the home pages. *Communications*, they indicated, was fourth most frequent (*Announcements, Course Documents, Assignments, Communications*), while the program counter pegged home pages and *Student Tools* as the most accessed. Thus, the most utilitarian parts of the course site received the most attention.

Indeed, the highest mean (3.6) in the values segment was chosen for the item, "Having access to course related material at any time I was able to use a networked computer." Students appreciated this availability more than contacting each other electronically. They were more curious to read my comments on the surveys (3.6) than just to see the results (3.2). It seems that this Web enhancement amplified the desire for recovering lost time in between person-to-person class meetings and for retrieving material when needed.

The highest mean, as on the mid-course evaluation, was associated with the learning about online access and response. When asked whether this medium provided a way to connect with fellow students who were hard to approach in class, most of my respondents implied that they would rather talk to someone than send an e-mail. Contrary to my hypothesis that you had to know someone personally before communicating via the computer, the responses to another item in this section suggested that not knowing a classmate very well would not inhibit an e-mail exchange. A moderate mean (3.0) suggested that my students' ways of thinking about computers and learning had agreeably changed.

Free responses to questions about the nature of this change in thinking were predictably varied. One student said her conception changed from that of a small, lonely fish in a large lake to that of a larger fish, among a school of others, in a small

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pond. This metaphor reveals a growth shift in personal status and a feeling that the electronic world has shrunk. A dissenter remarked that he had no prior conception of computers in research and ended up wishing for live discussion rather than any fooling around with search engines.

All respondents recommended that this kind of courseware be used in later years, and all but one were willing to consider using a similar package of Internet resources in their own teaching.

To Compute or Not to Compute?

As much as I enjoyed figuring out how to gather and display feedback and choosing what to feedforward, I tend to agree with Palloff and Pratt (1999, p. 159) that social aspects of learning are more influential than courseware:

> "Electronic pedagogy is not about fancy software packages or simple course conversion. It is about developing the skills involved with community building among a group of learners so as to maximize the benefits and potential this medium holds in the educational arena."

If I had to choose between time spent organizing a course around reliable educational principles and going online, I would certainly opt for pedagogy.

Almost everything that worked well in English 600 was affected by matching the phases of development (for a competent literary researcher) with opportunities to learn actively. That one of the two highest means (3.6) corresponded to students' convenient access in fetching material whenever they want suggests a strong inducement to discover material themselves. The fact that the other most valued activity was checking on the interpretation of the weekly surveys reinforces the hypothesis that social identity with a community of literary scholars is a precondition for successful integration of computing technology into academic work.

Those features of CourseInfo which enabled feedforward to be fed back were generally those associated with students' developmental advances. Students seemed to favor program capabilities that, in this supplemental situation, built on classroom community as long as the features were not redundant.

The question for the next generation of teachers with technology is not the dramatic either/or one of "do we use it all the time or not at all?" Computing as a strategy and tool of research must be taught. We must nevertheless think about and implement the ways people learn (pedagogy) and direct our energy towards adapting new media (electronic, or the next generation's replacement technology) to strengthen the mind that guides the mouse.

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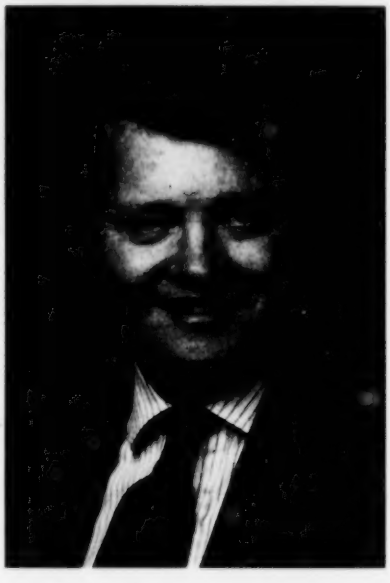
College of Arts and Sciences



Douglas Herrmann, Ph.D.
Chairperson and Professor of Psychology

Courses

- Cognitive Psychology
- Cognition in Everyday Life
- Learning and Cognition

My interests in teaching with technology center on improving my teaching in the classroom and in teaching online courses to distance learners. In my view, computer presentations are useful—both in the classroom and in online courses. The use of new computing technologies has allowed me to become a better teacher; my lecturing is now supplemented or replaced by computer presentations that grab attention and motivate my students far better than I could before I used the new technologies.

In addition, the use of new teaching technologies has helped me improve my teaching because the presentation of materials using technologies requires a greater adherence to the logical structure of course materials than is necessitated by lectures alone. As a result, use of the computer technologies has also expanded my understanding of the subject matter that I teach. In this article, I will first describe the advantages of teaching with technology. Then I will explain how I use technology in my teaching, both in the classroom and over the Internet.

Lecturing with Computer Graphics

Today's students have been raised on television; they possess a taste for more compelling graphics than ever experienced by previous generations. Still, chalk and a blackboard will always be useful for teaching topics that arise spontaneously in class. The same may be said of markers and whiteboards or flip charts. However, new and extremely valuable tools are now available for the computer presentation of knowledge and values as well as the development of skills. These new tools can enhance, and sometimes replace, traditional classroom tools.

Computer graphics, which include drawings, flowcharts, sketches, and more, will almost always be more visually compelling than chalk on a blackboard. This is true because since graphics must be designed ahead of time, they are often a better quality and usually catch the interest of students better than chalk graphics created spontaneously. Graphics presented via PowerPoint are clearly superior to the drawings of most faculty.

In addition, computer graphics are usually superior to even transparencies. As computer graphic displays are often impressive, they help students learn course content more effectively than transparencies for a variety of reasons. First, computer graphics typically involve more color than transparencies. Also, computer graphics are more likely to be presented in sizes that everyone can read, in contrast with many transparencies. Finally, computers present one graphic after another in an easy flow, in contrast to the slower manual presentation of transparencies. Because it is possible to present parts of a graphic step-by-step, computer presentation is usually superior to transparencies shown with overhead projectors. Preplanned sequences of graphics on the computer eliminate the common problem with transparencies—momentarily misplacement or presentation out of sequence.

Teaching with Technology

Because of the contributions that computer technologies make to classroom teaching and distance education, I decided to learn about these technologies and incorporate them in my teaching. I use computer technologies in essentially two different ways. First, I converted my lectures into PowerPoint presentations for my on-campus courses. The presentations are accessible on the department's Web site so that students can use them either to guide their note-taking in class or to help them study for examinations. Second, I have developed two Web courses, Cognitive Psychology (PSY 344) and Cognition in Everyday Life (PSY 340), for off-campus students.

Augmenting Classroom Presentations

In 1996, I attended the Syllabus Conference in Santa Rosa, California. This conference presented academics with the latest hardware and software for use in teaching. Additionally, the conference included a series of lectures and research papers about teaching with technology. When I returned from this conference, I began to incorporate PowerPoint into my lectures for Cognitive Psychology (PSY 344), an upper-level core course for psychology majors and minors. Occasionally, students in education also take this course.

The staff at ISU's Faculty Computing Resource Center helped me enormously in integrating PowerPoint into my Psychology 344 course by routinely posting my PowerPoint lectures to the Department of Psychology's Web site so that the students in my lecture courses could use my PowerPoint lectures as study guides. Many students reported that they very much liked having my lectures available in this fashion. It was my definite impression that students paid better attention once I began using PowerPoint to guide my lectures. I no longer caught students dozing.

The following year (1997) I attended the Course Transformation Academy (CTA) at ISU. The CTA made attendees more aware of the considerations that should be made when teaching with technology, and helped us learn the variety of ways that images could be constructed for PowerPoint lectures.

Developing Web Courses in Cognitive Psychology

In 1998 I agreed to develop a Web course in psychology to support the DegreeLink Program. In order to learn how to develop a Web course, I attended the Course Transformation Academy once again. Initially there were considerable challenges in attempting to develop Web courses—challenges that have largely been met by the distance education staff since then. For example, Interactive Learning Network, the courseware program used by ISU at that time, crashed and destroyed months of work completed by myself and other progressive Web instructors. Because ILN was susceptible to crashing, I waited until CourseInfo, a new courseware program, was available. I signed up for the CTA for a third time to learn this new courseware. Each year the CTA has incorporated new information and the latest advances pertaining to course development. I feel fortunate to have been able to attend the CTA course each year. Without the CTA, I do not think I would have been successful at transforming my courses for the Web.

The first Web course that I developed was Cognitive Psychology (PSY 344) for which, as mentioned above, I had converted my lectures to PowerPoint. This upper-division course is a review of knowledge concerning how we come to know the world around us through perception, learning, remembering, reasoning, and problem solving. The Web-based version of Psychology 344 covers the same material as my on-campus course, including information on memory and cognition extracted from *Memory from a Broader Perspective*, a textbook that I wrote with Alan Searleman (St. Lawrence University). In addition, students read assignments from a current textbook on cognitive psychology by Margaret Matlin (State University of New York College at Geneseo). To enhance this material, the Web-based course includes links to important graphic information, such as graphs and flowcharts to lessons. Also a variety of links are included for those students who are interested in pursuing certain topics about memory and cognition. Students who have questions about the material can contact me via e-mail.

Once again, in 1998, the University requested that General Education courses be developed for DegreeLink. In my case, this meant developing a new course that was not in our curriculum. After consulting with several colleagues (Dr. Robert Levy and Dr. Judy Barad), I decided to develop a course on Cognition in Everyday Life (PSY 340). In 1999, I applied for, and received, a course development grant offered through the Indiana Higher Education Telecommunications System (IHETS). Working on the development of this course taught me a great deal about Web presentations and developing Web courses.

Psychology 340 presents much of the material covered in my cognitive psychology course, but in a way accessible to nonmajors. The goal of this course is to provide students with a conscious awareness of the kinds of skills that enable individuals to learn successfully across the lifespan. Currently, this course is not taught on campus. Each written lesson covers fundamental knowledge of cognitive processes that can be used in learning, comprehending, remembering, problem solving, and reasoning. Students learn about different occupations, and how these occupations employ cognitive skills; the goal is to help students work with people from other walks of life.

This course uses two textbooks. The first, *The Ideal Problem Solver* (John Bransford and Barry Sein of Vanderbilt University), summarizes techniques used in problem solving. A second textbook, *Improving Student Memory* (co-authored by myself and two colleagues: Doug Raybeck of Hamilton College and Dan Gutman of Cognitive Associates), presents a holistic approach to learning in academic settings. The lessons have been written specifically to inform students of the many ways that they can use their minds to tackle learning and cognitive tasks. As with the cognitive psychology course, certain links present important graphic information, such as graphs and flowcharts. Also a list of links is available for students who are interested in pursuing certain topics about memory and cognition. If students have questions about the material, they send them to me via e-mail.

A third Web-based course, Learning and Cognition (PSY 603), is in development. This graduate course in cognitive psychology, to be available in our master's and doctor of psychology programs, should be ready for the next academic year.

Procedures Used for Web Courses

CourseInfo has afforded me a variety of ways to teach and for my students to learn. My Web courses present essentially the same syllabus as used for classes on campus, supplemented by additional information about how to use the Web. Examinations are available in a set time period on the Web. Students may use books and notes when taking the test but they are cautioned that the duration of the examination is too short to take without having done any studying. Students are free to progress through the course at their own rate, although the syllabus suggests dates of completion that would be expected were they taking the course on campus.

How Students Benefit from Web Lectures

Some students feel they learn as well, or even better, over the Web than in on-campus courses. A student skilled in the use of the Web can move back and forth in a lesson; this is not easily done in the classroom unless a professor is open to deviating from his or her lecture plan. With a Web course, a

student does not have to worry about falling behind as happens with professors who cover the material too quickly in class. A student can devote as much time to the material as is needed. Similarly, a student on the Web does not become bored as happens with a professor who lectures too slowly. A student on the Web can choose to proceed through a lesson at a pace that is comfortable and effective.

Contributions of Teaching with Technology and Scholarship

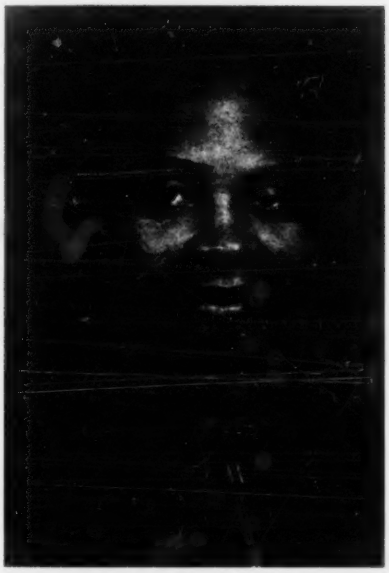
I came to ISU in 1995 with a scholarly interest in what people learn from computer presentations. Previous to coming to ISU, I had done considerable research work at the National Center for Health Statistics investigating how people did or did not understand maps that depict the seriousness of illnesses in each of the 50 states. This research revealed that the color and content of displays, as well as their sequence of presentation, affected how people learned about illnesses from maps that present the mortality rate associated with diseases in each state. The experience of conducting this research convinced me that computer graphics, well-designed and presented in a sensible sequence, could accelerate learning. This awareness was an incentive to use technology in teaching.

My research persuaded me that cognitive theory was needed to guide the use of such technology in teaching. As a result, Dr. Terrance O'Connor, Chat Chatterji, and I developed a framework to describe how teaching with technology occurs. We published this research in *National Issues in Higher Education* in 1997. This framework has lead us to conduct research into how learning varies according to the nature of graphics used and the learning task that graphics represent.

Summary

Recent advances in teaching with technology have brought about a revolution in how professors can and do teach. There are many advantages of teaching with technology over teaching without technology. Distance education has been transformed by the new teaching technologies. Using technology in my teaching has improved my ability as a teacher, deepened my understanding of cognitive psychology, and broadened the range of topics that I address in my scholarship. I am grateful that I have had a chance to take part in this revolution.

College of Arts and Sciences



Oladele Omosegbon, Ph.D.
Assistant Professor of African and African American Studies

Courses

- African American Culture I and II

Simple Media Designs Work

Beginners to the use of technology in transforming the teaching and learning experience are often tempted to think and expect that complex designs and use of sophisticated gadgets are the surest ways to assure best results. My experience with the Course Transformation Academy (CTA) in the spring of 1999 gave me a slightly different perspective.

Each CTA participant was assigned the task of creating a media project. My project, in which I sought to use technological innovation to solve a particular problem relating to concept/content, was the simple design of a Web site with links. Through this medium, I was able to stimulate students' critical thought and achieve intense peer interaction and engagement with the subject.

The media project I pursued was on Affirmative Action. During the regular course schedules we discuss Affirmative Action as a key public policy that, beginning in the mid-1960s, was designed to ameliorate (racial) disparities in social and economic opportunities and outcomes. It is, of course, a historical reality that this inequality showed up, originally, in racial extremities. Today, other types of disparities, particularly women and the physically handicapped, have been added. The difficulty, which ended up not being completely resolved due to the constraints of time and (with the benefits of hindsight) technology, was to have a clear conceptual understanding of Affirmative Action and what it is all about in the first place. Despite spirited attempts in our class textbooks, and my reinforcements, that the intention of Affirmative Action was to focus on the issue of oppression and not the problem of racism as such, it was clear that students held on to their preconceived ideas and positions. The most popular of these positions is that Affirmative Action was quota and reverse racism. The purpose of the project was, therefore, to design an appropriate medium in which more knowledge and understanding could be gained about this important, yet often misunderstood, public policy. The problem begging for solution was then framed as, "Affirmative Action: What is the Question?"

With the help of Paula Vincini from Distance Education, I settled for a Web site with links. This involved linking my class with other relevant sites on the World Wide Web. Students would use the information obtained from these other Web sites to participate in an informed online asynchronous discussion pertaining to Affirmative Action. The plan was to involve the entire class in this discussion so that students would subsequently be able to obtain quality information to support, revise, or substantiate their understanding and positions on this issue. A pilot trial of the site was attempted in the spring.

There were obvious lessons learned from this experience. Students were able to identify sites they liked and sites which were not too helpful to them. Every one of the participants agreed that they came out more informed about the question that Affirmative Action seeks to address. Students found a great potential for peer interaction. Ordinary sit-in media or textbook/journal assignments may not provide such results with remarkable economy. Students tended to respond slowly when presented with large volumes of Web resources or information. This is tricky because students also said that they liked the variety of sites and links contained in the design. The thing to avoid is the temptation to duplicate information. Links that are similar in content can be traded off.

There was general agreement that the presentation of the materials by various links, and the novelty with which some of them did so, helped to engage students' curiosity in the subject matter. A case in point is one student who previously maintained that Affirmative Action was a form of reverse racism. The student became engaged with a link entitled *Affirmative Action: A Popular Movement for Social Justice*. The student wanted to compare his thoughts with this site's position that Affirmative Action was about social justice.

Finally, it is striking that desirable results can be obtained through the use of simple, standard media techniques. Keeping it simple also works when it comes to transforming our courses by way of classroom innovations in technology.

School of Business

Douglas K. Peterson, Ph.D.
Assistant Professor of Management

Courses

- International Business
- Human Resources Management
- Management and Organizational Behavior
- Organizational Behavior and Operations Management
- Introduction to Business

"The problem is not to introduce change. The issue is to recognize it—it's already there—and help people through it. There are some very powerful high technologies that can assist. The bottom line is that we can't play by the old rules anymore."

—Harrison Owen

"Actually, any organization that waits for methods of transformation to be proven effective is probably writing its own epitaph."

—Ralph Kilmann

We seem to be moving toward a paradigm of "higher education without boundaries" in our efforts to make educational services available to broader market segments. Currently we have the great challenge before us to transform our traditional world, while discovering the one that is being shaped by environmental forces of change. Institutions and individuals will thrive depending upon their ability to master the implications of these forces, and to adapt their systems so they may continue their effective service to interested constituencies. Probably the most visible differences between higher education of the future and its present day counterpart will not be the service it provides or the knowledge it produces, rather the difference will be how, where, when, to whom, and with what media it provides those services. Our challenge is to make high quality university education more accessible to anyone who qualifies, at any time they desire it, anywhere it makes sense, using every technology we can muster. This essay outlines some of my thoughts and experiences regarding delivery of higher education services in a changing world. By using computer-assisted instruction (CAI) and computer-based learning (CBL), we can adapt, and adapt to, our markets, ensure our ability to remain effective providers, and continue to offer meaningful service to students, researchers, or interested members of our profession.

Computer-assisted instruction (CAI) and computer-based instruction (CBI) are tools that can be used to brighten teaching, add content coverage, provide subject matter variety, deepen coverage, broaden reach to the more technologically sophisticated students, and address those who normally wouldn't be able to attend traditional classes. Tools that are available, and not terribly difficult to use, are e-mail applications, local area networks or Intranets, the World Wide Web, course Web pages, Lotus Domino Discussion Groups, and integrated software packages like Microsoft Office. These computer applications, including the Web, are becoming increasingly important in the delivery of local and distance education. For the professor who has some experience in these applications, it is possible to greatly improve classroom performance. Over the next few years, it will be increasingly possible to develop courses and assemble students who don't require brick and mortar educational settings. Rather, it will be possible to convene high quality virtual classes, where students from a broad variety of backgrounds and locations meet electronically to engage in discussions covering a broad variety of subject areas. This is a particularly appealing vision of higher education, for as legislatures demand value and accountability, we can respond by changing the nature of education so that it is more effective, more valuable, more accessible, and more responsive to changing environmental conditions and demands for sophisticated workforces. Those of us who are developing these courses know there has been a great deal of development in the software and structure of college courses. While there is certainly a great deal of potential improvement yet to be seen, the state of the art these days makes CAI and CBI accessible to virtually any subject matter expert who can assemble a cogent thought, and keyboard a complete sentence. All faculty have to do is learn a few easy technical applications while transferring their innate creativity and desire to serve to electronic form. The potential for educational delivery is enormous.

Some Thoughts on CAI and CBT

For those who are interested in adding computer content to their classes, computer-assisted instruction offers a reason-

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ably interesting yet technically easy route. Once you have created a course Web page, it is possible to easily provide interactive quizzes with immediate feedback (see http://sapphire.indstate.edu/~petersod for an example), course syllabi, journal readings, assignment postings, tests, grades, make-up assignments, articles, and discussion mechanisms between students and almost anyone in the world.

Recent examples from some of my courses at Indiana State include a Web discussion between students in an international business class and other students in Bangkok, Thailand, and an outreach effort to address the needs of a student who had become temporarily disabled. In the Thailand example, students learned that assumptions regarding business and management can be different depending upon cultural anchors. What makes this more interesting is that students learned this from first person experience. They spoke with Thai students. It was a very helpful exercise in learning because it assisted students' exploration into the intricacies of international business while coming to the realization that business management is simultaneously "95 percent similar across cultures, yet fundamentally different in all important respects." Another example of using Web technology for students who cannot attend classroom sessions was my creation of virtual make-up exercises for students who are sick, but who still have access to the outside world through home computers. One student, pregnant and sent to bed for the last trimester by her physician, was able to complete my college course on time because I created a Web page specifically to meet her needs. This helped her avoid having to complete the course later, when she normally would be facing time constraints relating to the care of her new baby.

For the more adventuresome faculty, the creation of computer-based learning offers a challenging project. Web-based applications are becoming popular, and institutional support for money and training is growing tremendously. At Indiana State University, a Course Transformation Academy (CTA) is offered several times each year. The CTA provides exposure to courseware, computer applications, and institutional expertise so that the course developer can access the myriad support mechanisms that are available to any interested educator.

Some Suggestions

Adding CAI applications to existing courses is very easy. All a faculty member requires is a Web account (available, for free, from ISU's Computing Services or similar units on most university campuses), a software program for developing the base Web page (Microsoft Word, Microsoft FrontPage, Netscape Communicator, *anything works*), a File Transfer Protocol (FTP) program, and some time. My recommendations for this activity follow.

• **Establish a vision.** What do you want to accomplish? Do you want to save class time by moving quizzes to the Internet? Do you want to save a few trees by moving syllabi to the Internet? Would you like to make your course entirely paperless? Would you like to show old examinations? It is useful to write down those CAI applications you desire. You can then develop a plan for establishing the Web page, envisioning what it will look like, and constructing the page. This vision process will become critical later because it will save an enormous volume of time.

• **Choose elements for your Web site that make sense and are technically easy for you to understand.** Creating a course page, linking the page to syllabi, posting assignments and old texts, and creating links to other sites are the easiest to engineer. Linking to online quizzes that grade themselves, finding research databases, and accessing journal articles are a bit more complicated. Finally, linking video and establishing domino discussion groups are a bit more complicated still.

Attending the Course Transformation Academy, or another faculty development workshop, is a good way to start. Examining online documents describing how to create Web pages is also helpful.

• **Don't eliminate assistance and resources just because you did not invent them.** Frequently, publishers will create free course Web sites and provide online support for your activities. Their hope is to create high switching costs, and keep you in successive editions of textbooks as the revision cycle gets shorter. Since most publishers are providing this type of online support in most mainstream areas, it is reasonable for faculty to get course support from any text material at any time. Also, look around to other universities and their online activities relating to technology transfer and course development. There are nice tips available in these sites. Available is free software that can make a site more effective. One example comes from the University of Hawaii in Hilo. Their site called MOTTED (http://motted.hawaii.edu) offers free quiz registration and service to any educational institution in the United States. Here, a faculty member can create online quizzes and use the software for free. This software grades multiple choice, true-false, fill-in-the-blank, and essay questions.

• **Experiment as much as possible.** This takes time, but it is time well spent.

• **Try to be as user-friendly as possible.** Instead of entering an address that students have to type again, create the link they need to access it easily. Use bright colors whenever possible. Insert pictures. Use humor.

Creating Web-based courses, or CBI, is a little more complicated. A faculty member should attempt to gain some training and consult with instructional designers whenever possible. Following are some recommendations based on my experience.

• **Establish a vision.** Decide what you want to accomplish. Don't just plunge into creating a course without thinking it through. CourseInfo, a courseware package by Blackboard, evoked visions, for me, of a *tabula rosa*—a blank slate on which anything could be written. Just like any creative faculty member, I felt like an artist being given a blank canvas—one of the most exciting gifts possible. The difficult part was creating a structure that had potential for making the course understandable to a novice student. After fumbling through some things, my experience indicated that a modular and predictable structure should probably be created. This helps students know what to expect, and to understand what is com-

ing next in their lesson plan. My favorite order is: introduction, readings, additional articles, video, useful Web sites, assignment, and additional resources and activities.

• **Allow lots of time for course development.** You may need more than 100 hours to place a course online and make it functional. Expect to use graduate student assistance whenever possible. Learn to block out time each week to develop courses.

• **Use technical and professional assistance at all possible junctures.** Also, don't limit yourself to intra-institutional sources. Web developers love to show what they know and offer tips.

• **Make use of and contribute to faculty support groups relating to course development.**

• **Provide lots and lots of student support.** E-mail, phone communication, and discussion help keep the "touch" in with the "tech," and help to avoid students' feelings of institutional and professor disinterest.

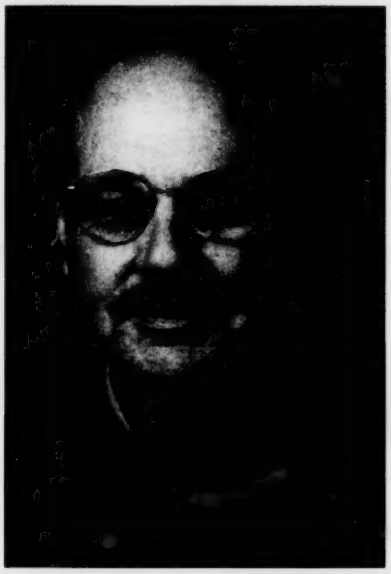
Conclusion

I believe that student learning is enhanced by both CAI and CBI. My students indicate that their experiences are generally positive and a bit richer because of the added technological dimensions the course provides. It also improves their perception of a professor's subject matter currency and technical competence. The Web provides the opportunity to serve students better, in more unique ways. The Thai university discussion and the temporarily disabled student are only two examples from the scores of good opportunities that I have encountered.

Using the Web improves time effectiveness and planning as it relates to instruction. It allows high potential for offering a greater variety of activities for a wider range of students. Time effectiveness and planning is enhanced in several ways. First, using the Web for quizzes and examinations allows one to make the most of the classroom time. By providing examinations through the Web, class time can be maximized for discussion and activities. My experience has been that in a typical upper-division course, it is possible to gain anywhere from six to eight days of additional instructional time by moving examinations and post-examination discussion to the Web. This represents a 25-35 percent increase in effective time utilization. All it takes is a little creativity, tenacity, technical expertise, and desire.

In conclusion, as delivery technology improves in higher education, I am reminded of Robert Persig's *Zen and the Art of Motorcycle Maintenance*. Persig observes two descriptions of how people see the world. For some, the world is divided into a *romantic* vision, where knowing, intuition, and "fey" dominate decisions and understanding. For others, a more *classical* conceptualization exists. These are more positivistic types. For them, the only world that exists is the one that can be created systematically, logically, and through durable experience. In *Zen and the Art of Motorcycle Maintenance*, Persig's character Phaedrus describes the romantic university as existing in spirit and faith, where ideas and discussions can be created without the necessity of buildings, bricks, walls, and chalkboards. Here, it was the *idea* of the university that made it exist in the hearts and minds of students and faculty. The classical view, on the other hand, was one that necessitated the creation of buildings, bank accounts, chalkboards, offices, and classrooms. Without these things, according to Phaedrus' positivistic side, the university could not have justified a budget, collected money, or hired a professor. A major theme of this story relates to Phaedrus' confusion regarding how to reconcile these two conceptualizations so they can exist simultaneously. For Phaedrus, the two could not. It was this confusion that drove the character mad. My vision for the distance education effort, and for the inclusion of technology into the classroom, is for us to work to bring these conceptualizations together. For many of our students, the faith that we can provide educational services beyond our "mortar border" is what makes our distance efforts legitimate. The same underlying assumption is true regarding course transformation; this is what keeps our resources applied to the effort. If we keep this vision, and make use of our classical structure, we should be able to transcend our "mortar border" and help create an institutional and industrial transformation that enables us to offer increasingly critical university education to anyone who qualifies, at anyplace, and at anytime. We can expand our university concept, offer courses in traditional settings, and address the changing needs of the population as the century changes, and as our understandings (our paradigms) of what we do change. It is possible to create the virtual university out of the classical structure. While it is possible to offer courses in traditional settings, it is also possible to expand those settings beyond the typical brick and mortar building. This virtual university, or boundary-less education, is the paradigm of the future. As Kilmann points out at the beginning of this essay, we should work toward this transformation now. If we wait, it may quickly become too late for all of us.

School of Education



David A. Gilman, Ph.D.
Professor of Education

Courses

- Measurement and Evaluation in Education

Can Old Professors Learn New Tricks?

During my forty-fourth year of teaching, I became enchanted with the prospect of using distance learning to enhance my repertoire of instructional techniques. I suppose my motivation was partly to serve the needs of students, but there was also a personal need to be "with it" in terms of using methods and strategies that were in keeping with the tenor of the era. It is also fair to say that I had noted that some of my colleagues were getting merit raises simply because they had taught a course by distance education.

I had participated in the Course Transformation Academy, which provided instruction in the many alternatives that are available for teaching through distance learning. Reflecting on this metaphorically, there were so many possibilities that it was like providing a menu to a starving man.

The course for which I began my distance learning endeavors was Measurement and Evaluation in Education, a graduate course in educational testing and assessment. I was not, and am still not, quite ready for a course that is entirely Web-based. I noted that other instructors had developed Web courses by just transposing their textbook or course pack to computer memory so that students were constrained to read screen after screen and hour after hour of printed text. This seemed to be boring, both to students and to any instructor who would prepare such a course. Furthermore, an actual textbook is more convenient to students and instructionally adequate.

The other alternative was to simply post a schedule of instructional activities and assignments the student would complete according to their own schedule on a Web site. This seemed to be a waste of technology since this could be accomplished many other ways. I wanted my classes to have more spontaneity than a canned schedule would allow—the canned schedule lowered the chance of serendipity. Sometimes, a chat room accompanied the schedule on the Web site so students could share their doubts, misconceptions, and misgivings about the course and subject, so to speak.

No! These were not alternatives that are congenial to whatever it is that I would like to believe about education. If I were to use technology through distance learning, there would be a multi-media approach that would utilize the best of several alternatives that were available and use each of them in a way that would most benefit my students. This method was to be an all out attack through distance education.

Students who were taking the class through distance learning did not ever need to come to campus. They would have a textbook that I had written and previously used. Since I had taught arranged classes through correspondence courses, the U.S. mail, or snail mail as it is sometimes called, would still be an integral part of my plan. The kinds of instructional exercises sent to students and returned by them were best done without the constraints of e-mail.

I also was fortunate enough to obtain a period of time that I could broadcast through statewide television (via the Indiana Higher Education Telecommunications System), and my lectures were delivered simultaneously on television and in the studio. Students corresponded with me anyway they chose: by U.S. mail, by phone, by voice-mail, by e-mail, or through word of mouth transmitted through associates who were visiting campus. My office and home phone numbers were made available to students, and they were invited to call at any reasonable hour. Calls were returned immediately, and were done in an attitude that students come first.

The key to this multi-faceted approach was the video lectures, and it is the successes and problems of this modality that are the principal focus of this article. It was with great care and strategic planning that I prepared my first lesson to be broadcast throughout the state. I watched tapes of other instructors and carefully critiqued their techniques and stage presence. In the days leading up to the first lecture, I had many dress rehearsals so that phrases would be carefully turned and timing would be flawless.

The situation was further enhanced because my daughter, Ruth, who had recently left a high paying job in industry to return to academe, taught under the same conditions in the same room just before I took my turn. As far as I know, Ruth had never taught a University class before, so I charitably volunteered to review tapes of her presentations. She condescended to do this if and only if she could also look at mine.

The first night that I taught by distance learning, I went to the studio 30 minutes before I was to teach. The first question I asked, was "How was Ruth's lesson?" The reply was, "She was great—a natural. She will be a tough act to follow." It was at that moment that I first felt intense pressure.

Five minutes before the lesson was to begin, the director came to me and said, "You aren't going to be able to go on yet. The system is down, but we have called an engineer." I thought they had called an engineer from upstairs. Actually, he had been called at his home, which was about 20 miles away. Forty minutes after the lesson was supposed to begin, I was advised that the system was not going to be up that evening, and I should proceed with my lesson. I was assured that a tape of that night's lesson would be made, and copies of it would be sent to each of the students who were enrolled in the course.

So, shaken and rattled, I recognized that my hours of preparation were lost, my virtual memorization of the lesson now yielded to complete improvisation, and eloquence was replaced by stumbling. But, I told myself, "You are a professional, and this is nothing you cannot rise above." Accordingly, I proceeded. However, about five minutes into my improvised stumbling, a message came into the studio, "Dr. Gilman. This is Gary. We just got on. What did we miss?" So, I tried to get Gary up-to-date, but before I had finished with that, another message. "Hey, here we are in Jasper. What do we need to do to catch up." Throughout the next 75 minutes and in two-minute intervals, one-by-one the sites reported in and inquired as to what they had missed.

By then, I was completely rattled. Later, when I viewed the first tape with Ruth, I was thoroughly embarrassed by what I saw. This was truly an anthology of things teachers should never do. When Ruth and I viewed the tapes, she was unmerciful (Ruthless) in her criticism of me. (I never did get to see her tapes.) When I get rattled or threatened, I talk to myself, and this episode left me talking to myself for five days.

Concurrently, it was necessary to conduct what amounted to a scavenger hunt to find out who was enrolled in the class. No stone was unturned to find out where we would send lecture notes and exercises that students were to complete and return. This detective work took two days.

Sadder but wiser, I returned to the studio the next week after receiving some encouragement and rationalization from the studio director, a long-time friend of mine. This time, my instruction went better. My students were both understanding and forgiving of the debacle that occurred during the first class.

But there were still problems with the approach I had chosen. There were 30 students enrolled in the class, and corresponding and mailing was unexpectedly labor-intensive. My two student assistants and I devoted a day each week to grading and mailing. A graduate student assisted in preparing the tests and practice tests, which we were led to believe could be accomplished through the Web.

I have always believed that one of the unrealized potentials of computers in education is the administration, scoring, and recording of test results. I envisioned online testing as one of the best parts of distance learning.

But testing on the Web was problematic. First, test security was a problem. How can test exercises be provided to students at a time that is convenient for their schedules and still be done in a way that ensures fairness to all students. Because students in the class were using Internet services such as America Online, some experienced being unceremoniously dropped after 20 minutes, so their test answers were lost and could never be recovered. This was, of course, unacceptable, and not a healthy thing to do in a class intended to teach sound principles of educational testing.

There was also the challenge of making teaching materials designed for classroom instruction appropriate for use in video, e-mail, or correspondence. These were classes that had always been in 15 three-hour segments, but were now reduced to 16 two-hour sessions. I also noted that for distance learning, you not only need a lesson plan, but you also need another plan. For example, if the overhead projector isn't working, you will need to have some other way to project information. If there is no response forthcoming from the sites, you must abandon question and answer.

Since I knew that I would teach by distance education this fall, I practiced the preceding summer by teaching a regular class in a distance education studio. The 30 students in that class were great, and it was one of my all time favorite classes.

I returned in the fall to teach the same class in the same studio as before. This time, a new problem surfaced. There is a monitor that tells which student sites are ready to communicate with the instructor. However, the sites listed on the monitor were not the sites that I was broadcasting to but rather those of another professor, Dr. Findley. During the first weeks, students in his class were trying to communicate with him by calling out many times so that it could be heard in my class, "Dr. Findley! Dr. Findley!" It was at this point that I resolved never to try distance learning again. I questioned whether the state of technology could permit the teaching utilizing either the Web or statewide television in a way that would meet my standards.

However, my department chairperson recently asked me if I would teach two televised classes next year, and I said, "Sure!"

I am particularly pleased with the virtual library that I have developed for my research class. Students can use a variety of search engines and can access state, federal, and commercial databases and reference works without leaving their homes. I have even put some features into that Web site, like finding the best route to travel, finding the value of a new or used car, and finding the lyrics to any song. The Web site URL is gilman.indstate.edu

I was pleasantly surprised to find that with one exception, all of my distance learning students evaluated the instruction and the class very highly. I am still marveling at the stupidity of that one student, but apparently, he, too, has reconsidered. This fall, he enrolled in yet another of my distance education classes.

School of Education

Georgia Hambrecht, Ph.D.
Professor of Communication Disorders

Courses

- Supervision of Speech-Language Therapy Service Providers
- Methods and Administration in Communication Disorders

When it comes to Web-based instruction, I am clearly a novice. Since I have been at the University going on 20 years, being a novice in teaching is, at the same time, both an intimidating and an exhilarating experience. My motivation to become involved in distance education was not a burning desire to become technology based in my delivery of course information, but rather a real need to keep in better contact with my student teachers when they were placed around the state, and to reach an audience of practicing professionals who were not likely to return to campus. I thus began my forage into distance education.

My first attempt at computer interactive distance education was unsuccessful. In 1994, Dr. Mark Stimley, a colleague in my department, and I attempted to use Norton Textra Connect as a networked writing environment. We did not possess the expertise needed, and although others tried to help, we could not make it a workable option. Thankfully, my second attempt met with greater success. In 1998, the Course Transformation Academy (CTA), offered at Indiana State University, provided a network of individuals who could be contacted for support, a possible online structure for a user-friendly and uniformed delivery of programming, and an opportunity to try-out both the student and teacher roles of distance education in a very safe environment.

I was truly amazed at all the individuals available on campus to assist with course transformation. I had no idea of the support services available on campus with knowledge of distance education needs. The Faculty Computing Resource Center, the Photographic Imaging Services, and the Center for Teaching and Learning were a few of the organizations that provided me with assistance during or after the CTA training.

All the participants in CTA were requested to do a self-identified project. My project during CTA involved a hypermail listserv set up to pilot interaction with student teachers in the field. I, like many distance educators before me, found the discussion component a serious challenge. After completing the project, I identified the following:

- In the future, I would increase participation by planning for discussion requirements and their inclusion in the syllabus, with minimal amounts of participation required and credit/extra credit given toward class grade.
- I would have several assignments during the six weeks when students are on campus prior to their off-campus student teaching placement, so I am sure all have access and the skills needed to participate.
- One of the experienced distance educators who spoke to the class mentioned the use of a kind of an online office hour. I believe discussion would increase if students knew I would be on my computer for a given hour each week and would not only welcome their messages, but would also respond immediately.

I am presently planning for use of distance education in the upcoming semester with student teachers as well as for the delivery of my first entirely Web-based class. Two things have been most helpful during this preparation phase. The first was perusing portions of classes currently being taught on the Web by logging in as *guest* to see what other instructors are requiring. The second was having contact with a professor who had used the technology. Dr. Maurice Miller was generous in sharing his experiences and insights on an informal basis.

I have enjoyed my initiation into distance education. However, I look forward to the time when I will be a seasoned veteran of the process.

20

School of Education

Susan Kiger, Ph.D.

Instructor of Curriculum Studies and Teacher Education

Courses

- Methods and Content Literacy Course

The integration of computer-based technology into undergraduate preservice teacher education in the Department of Curriculum, Instruction, and Media Technology (CIMT) has been an exciting, educative, and evolutionary process. We have accomplished much in terms of instructing, modeling, and challenging our students to use this technology effectively to support classroom learning both at the University and in public school settings.

Furthermore, technology continues to support the professional research in which our students engage, and we have structured opportunities to undertake and continue professional conversations with other students and professional educators through a variety of electronic listservs.

In short, our students not only experience computer-based technology as a significant support for their own learning, they use it effectively to create meaningful learning for others. While all of this represents considerable hard work and growth, the next rung in this programmatic evolutionary ladder bids us on, and it is to that rung that attention is now turned.

Our performance-based, undergraduate teacher education curriculum relies heavily on early field experiences (EFE) in public school classrooms wherein students hone their observational, instructional, and reflective skills. Fortunately, through a Professional Development Schools (PDS) partnership, ISU has the advantage of having excellent public school teachers working in tandem with CIMT faculty to guide student growth in this enterprise.

Despite this long-term collegial support, a significant problem remains. PDS teachers have limited access to the instructional materials used in the campus-based portion of courses, and while they do have significant communication with the individual students assigned to them, they have no central means of communication with our students as a whole before or after the EFE. In other words, while these PDS teachers are co-instructors for a portion of the course, they neither have a full sense of what the course covers instructionally, nor do they have a means of fully supporting student growth.

Here the Course Transformation Academy (CTA) and the CourseInfo software have offered a rather efficient solution that not only holds promise for addressing this immediate concern, but could also further support the mission of the PDS partnership. A blocked methods and content literacy course (CIMT 300/368) for which I hold direct instructional responsibility serves to illustrate my point.

In CIMT 300/368, our students spend the first portion of the semester understanding the research base of pedagogy. Supplementing this research, an extensive array of assigned readings help to direct student reflections, most reflections being electronically posted on the class listserv. Students continue to observe instructors modeling the use of computer-based technology as an integral component of a variety of instructional strategies. Additionally, our students create and practice using these strategies in a series of presentations and micro-teaching activities. Throughout, reflection centers on the effect of these strategies on student learning and achievement in the public school, especially as these support students' life chances. Armed with these understandings and practice from on-campus activities, our students enter the EFE ready to plan, teach, assess, remediate, and reflect upon learning in a public school setting. Sadly, other than placing the course syllabus and a copy of the readings on reserve in the public school library, PDS teachers have little access to this part of the course. Consequently, they are somewhat unsure of the knowledge and skills our students bring to this experience. However, the possibilities inherent in the CourseInfo software are helping us to address this difficulty.

During the summer of 1999, an electronic version of the class was created via CourseInfo software to supplement the campus-based delivery of the course (URL: http://online.indstate.edu/courses/CIMT300_368). Our electronic classroom houses all the paper-based components of the course such as the course syllabus, handouts, project assignments, and rubrics. Additionally, it links to a variety of assigned readings on electronic reserve in the library.

Though we used the fall semester singularly to pilot the use of this electronic classroom with our students, we believe that this may provide the link needed to connect our PDS teachers with the campus-based portion of the course. It will allow our PDS faculty Web-based access to all the course

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materials so that they may stay current with any or all the readings and activities in which our students engage. Furthermore, the chat room will allow our PDS teachers to enter ongoing professional conversations with our students as a whole as they reflect on the meaning and applications of what they are learning. In this sense, the PDS faculty will become virtual, real time instructors for the campus-based portion of the course. We believe this interaction will best help our students as well as PDS teachers in transitioning to the EFE portion of the course. In terms of the PDS mission, such participation should help support the professional development of PDS and CIMT faculty alike as we critically explore best practices with our students. An immediate research agenda is, of course, the effect of this effort on the perceptions of, and subsequent actions toward, best practice for all stakeholders involved—University students, PDS, and University faculty alike.

In piloting the electronic version of our course, some difficulties have been encountered in the successful use of this medium. For instance, certain versions of particular Web browsers are unable to interface with the electronic reserve materials. Currently, University personnel are attempting to rectify this issue. Though access to the Internet has not been identified as a problem by our students, and access is available to our PDS faculty, the time to download or print some of the materials has been of some concern. We have discovered that graphics tend to present most of the problem in this respect, and have begun to seek ways to address that difficulty. Of course, much time was devoted to copyright issues at the outset though we continue to pursue the ramifications of PDS faculty access to electronic reserve materials. Because they hold certain privileges to University services by virtue of the PDS partnership, we believe this issue will be successfully resolved. Despite the challenge of addressing these difficulties, the long-term benefit for all involved well outweighs the short-term energy devoted to resolution.

Certainly, climbing this next rung on our evolutionary ladder represents an expansion not only of our use of computer-based technology as an instructional tool, but a virtual expansion of our classroom across the physical boundaries of the University into the public schools. More than the typical moving "from here to there" in terms of the transition from instruction and practice on campus to instruction and practice in the field, the field and the campus experiences merge, one informing the other. Perhaps in this way, theory and practice may more fully merge, one informing the other with University, public schools, and our mutual students the better for the effort.

School of Education

Karen C.Y. Liu, Ph.D.

Professor of Early Childhood Education

Courses

- Comparative Studies of Early Childhood Care and Education Around the Globe
- Early Childhood: Parent-Teacher-Child Relations

In the last two decades, technology has changed the role of teaching and learning. Technology has impacted how teachers teach and how learners learn. After completing the Course Transformation Academy and learning how to use CourseInfo to develop a Web-based course, I was still debating, "Is a Web-based course the best way to deliver early childhood courses?"

As an early childhood educator, I believe in the importance of hands-on learning. However, I feel not all courses are suitable for distance delivery. The instructor should consider the content of the course and the type of students, and make an assessment to determine whether an online course would be a successful one.

In this article, I would like to share my experiences in using technology in two of my classes, Comparative Studies of Early Childhood Care and Education Around the Globe: A World Perspective (ELED 595) and Early Childhood: Parent-Teacher-Child Relations (ELED 647). Although these classes are not entirely Web-based courses, I believe that I used the best part of both formats, online and face-to-face delivery strategies, to facilitate the ultimate learning outcomes.

In a traditional face-to-face class, instructor and students interact with each other. Students also have the opportunity to interact with each other. In a distance learning situation, students find many advantages over the traditional face-to-face instruction. For example, using online instruction, learning can take place from the convenience of home and other places.

Last summer, I received funding to teach Comparative Studies of Early Childhood Care and Education Around the Globe: A World Perspective (ELED 595). This course is designed to provide graduate students an opportunity to study the early care and education system from a global perspective. Because of the limited number of journals and books that are published in the United States offering information on early care and education in different countries, the Internet became an ideal source to search for information around the globe.

In this class, I experimented with the use of both face-to-face delivery and online discussion formats. I found technology not only facilitates collaborative learning, but also enables students to fulfill the following learning goals.

Discovering Information and Resources

Teaching and learning in the twenty-first century is no longer limited to the physical limitation of a boxed classroom. In the past, the number of library holdings determined how resourceful an institution was. Thanks to the fast growth of technology, teachers and students can access an array of information and resources at their fingertips from the convenience of school and home. Although not all students who enrolled in my classes were computer literate, students quickly learned the basic skills to function as active participants in various Web assignments.

It is no doubt that the Web holds significant treasures. Getting on the Web to find information is like conducting a treasure hunt. The process is fun and exciting. However, sometimes the information is not always easy to find. Most students with an Internet browser are able to do a net search and begin looking for information. But without an understanding of appropriate search strategies, students often find themselves spending a great deal of time looking over thousands of useless sites.

Through online discussions, my students learned how to use the keyword search technique and how to fine-tune a search engine. I found it important to provide students with the opportunity to develop Internet search skills. It made students' lives much easier when they worked on the course assignment and researched information on early care and education around the globe.

Sharing Knowledge and Information

Technology can facilitate and encourage the interactive learning process. As a part of Elementary and Early Childhood Education course requirements, students needed to reflect on their readings with other classmates through the Internet. We used both synchronous and asynchronous discussion formats. Synchronous discussion provided students with immediate feedback. After students felt comfortable enough to share their reflections and feedback, it was time to

use the interactive learning mode, the synchronous discussion format. Students often came up with new thoughts based on one another's ideas. The synchronous discussions were always very engaging.

The asynchronous discussion allowed students more time to provide thoughtful reflection. In the past five years, international students have enrolled in my class. I find international students often offer wonderful reflections through asynchronous discussion format. Asynchronous discussion also benefits those students who need a little more time to reflect and to express their thoughts in words.

Overall, by using asynchronous and synchronous discussions, I was able to create a wonderful learning community in which students were supportive of each other beyond the online discussion.

In the ELED 595 class, students read extensively and then reflected on the key concepts in class or on a class listserv. Sometimes students worked individually. Other times, they worked in groups to present research results. I found that reading students' messages through e-mail on the listserv was much easier than using the Web-based discussion board. Technology facilitated the sharing process while creating a learning community.

Disseminating Learning Outcomes

Students were required to research the early care and education system in different countries. They read the information they found on the Web and created new documents. They compiled resources and disseminated the information immediately on the Web. The spontaneous learning and sharing situation encouraged students to complete their course assignments on time. Since they had to post their reading reports, reflection papers, and Web search results on the listserv, there was a record indicating the time and date they posted their work. This eliminated several problems I used to encounter when students turned in a late assignment, such as determining the date when the student turned in the paper or locating a misplaced paper.

Overall, my online experience has been very successful because I utilized the best parts of both formats, online and face-to-face, to facilitate the ultimate learning outcomes. Since most of the information students obtained was from the Internet, I distributed a limited number of hard copy handouts to students.

Using Technology to Enhance School and Family Connections

In addition to the experience of using technology in learning, I want our students to be able to use technology to improve their teaching and their relationships with the children and families they work with. I believe I achieved this goal through an approach I used in my Elementary and Early Childhood Education 647 class, Early Childhood: Parent-Teacher-Child Relations.

Last fall, when I taught ELED 647, I choose a different approach of using technology to enhance teaching and learning. This class stresses the importance of communication between parents, teachers, and children. Students in this class were required to demonstrate their ability to create a PowerPoint presentation for a parent meeting.[1] Students also were required to learn how to operate a digital camera and use a scanner.

My students demonstrated creative approaches on how to use technology to enhance communication between teachers and parents. In the past, classroom teachers liked to take snapshots of children engaged in various activities. Teachers created collage books filled with children's activities. We always say that a picture tells more than a thousand words. Those collage books have been used to facilitate teacher and parent communication. The drawback of using a regular camera is that it is costly for film and film processing. Even with the convenience of one-hour photo developing, it still can be time consuming for the teacher.

In my ELED 647 class, I tried to foster college students' creative abilities by asking my students to use technology to enhance the communication between classroom teacher and parents. Students used a digital camera to capture daily activities that children were involved in. Those digital pictures were printed out on paper and made into daily activity logs. These picture activity logs were placed at the sign-out table in a childcare center. When parents came to pick up their children, they had the opportunity to review the digital picture activity logs and see what activities their children had engaged and/or participated in. Kindergarten teachers allowed children to take these digital picture activity logs home to share with their parents.

To further use the technology, those digital pictures were created into daily electronic activity logs. Parents could review the activities that their children were engaged in through a computer monitor. Those picture logs not only enhanced the communication between the parent and teacher, but also fostered the parent-child relationship.

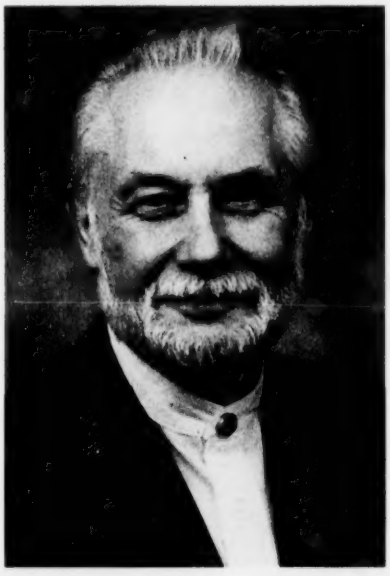
In addition, classroom teachers scanned story pictures and displayed the pictures through the computer monitor. This minimized a problem that many teachers experience when children complain, "I cannot see." Furthermore, students demonstrated the use of Web search skills; they brought the whole world into the classroom. Using technology, teachers demonstrated different culture lifestyles and practices to enhance children's cultural awareness.

Conclusion

Overall my use of technology in teaching and learning has been a very positive experience. I feel that I have used technology to enhance teaching and learning. In my ELED 595 class, I used technology to facilitate collaborative learning, and in my ELED 647 class, I used technology to strengthen parent-teacher-child relations. After attending the Course Transformation Academy (CTA) session, I was much more comfortable using and integrating technology in my teaching.

[1]Usually, there are one or two students who enroll in my classes who are not computer literate. Those students who have no previous experience using PowerPoint are encouraged to attend computer skill training workshops offered by Information Technology (IT).

School of Education



Lawrence Reck, Ed.D.

Professor of Education

Courses

- Foundations of Libraries and Librarianship
- Selection of Library Materials
- Literature for Young People
- Introduction to Cataloging and Classification
- Reference Sources and Services for Library Media
- Production of Instructional Materials
- School and Public Library Administration
- Practicum in Library Media
- Using Microcomputers in Education and Training
- Topics in School and Public Libraries

No students on campus? If all goes as planned, this will become reality during the fall semester of 2000. Presently, I am in the process of placing all ten of the library/media courses on the Internet so students can take any course at any time, at any place, and at any pace. But first allow me to provide some background regarding this program.

Unique to the United States? Well, maybe. Let me explain. In 1992 the Indiana Professional Standards Board was given authority to oversee all teacher preparation and licensure concerns for the state of Indiana, their assignment being to improve the quality of teaching and learning. In 1998 library/media was identified as a content area for which there was a need to develop new standards. As a member of the Indiana Professional Standards Board for Library/Media, it was gratifying to be able to have input into designing criteria for those selecting this area for their future careers.

In the past, a library science program that included both an undergraduate and graduate program was offered in the College of Arts and Sciences. After retirement of the director, the program was to be terminated. Through the efforts of former Curriculum, Instruction, and Media Technology chairperson, and present associate dean Dr. Jerry Summers, the program was revived in the School of Education. With the support of acting dean, Dr. Rebecca Libler and Department of Curriculum, Instruction, and Media Technology chairperson, Dr. Cathleen Rafferty, the program was given new life from which a revitalized and dynamically different program emerged.

The Library/Media Services Minor Program is based upon, and meets the requirements of, the following agencies: American Library Association/Association for Educational Communications and Technology (although not accredited by ALA); Indiana Professional Standards Board "Standards for Teachers of Library/Media;" INTASC (Interstate New Teacher Assessment and Support Consortium) "Information Literacy Standards for Student Assessment;" NCATE (National Council for Accreditation of Teacher Education); and the Indiana Library and Historical Board Standards for Public Libraries. Sixteen standards were taken from these agencies to form the basis for the program.

The program trains both public librarian IV and school librarians and is designed primarily for undergraduates, although certification is also granted on a graduate level. Although the program has yet not been publicized, over 30 students are presently enrolled.

The complete curriculum development process started with a needs assessment when students requested Dr. Summers transfer the program to the School of Education. Upon consulting the job market possibilities, literally hundreds of job openings were noted. Every week since then, a stream of jobs have come across my desk, some weeks bringing 40 to 50 new job opportunities for both school and public libraries—in Indiana alone. Our career bulletin board lists 50 to 60 current jobs throughout the year. This gave me the impetus to develop a program to meet these needs. The five accrediting agencies, mentioned earlier, were contacted to determine their standards. A committee from CIMT was then formed to group these standards into categories from which 16 were extracted. A workshop of practitioners from school, public, and academic libraries was selected. They met at ISU and designed learning activities for each standard, working on scope and sequence for the program. The group worked under the philosophy adopted by the accrediting agencies, which specify that the learner must show what he/she knows and is able to accomplish. The program is performance-driven and requires 27 credit hours of course work.

The CIMT committee then categorized these activities into groups of related content. Alice Reck, former coordinator of the Instructional Materials Center for the Vigo County School Corporation, then categorized the learning activities under proficiencies or outcomes. Between six and eight

proficiencies were designed for each of the ten courses and choices of learning activities were listed under each proficiency, some courses offering 80 projects. The proficiencies and learning activities were again grouped into similar content areas to form courses. One result of this procedure is the School and Public Library Administration course with 16 original standards, eight proficiencies, and 77 activities. The literature course contains 16 standards, eight proficiencies, and 80 activities. Selections must be made under each proficiency, thereby meeting all standards for those courses. The final course to be taken is the Practicum, whereby each student must serve 120 hours in a school or public library. A portfolio is required demonstrating that he/she has successfully accomplished each of the 16 standards. This will be their culminating activity.

Core courses consist of Libraries and Librarianship, Selection of Library Materials, School and Public Library Administration, Production of Instructional Materials, Introduction to Cataloging and Classification, Reference Sources, Literature for Young People, and the Practicum in Library/Media. Elective classes consist of Using Microcomputers in Education and Training, and Topics in School and Public Libraries, covering the areas of distance education, library assessment, and librarian-teacher cooperation.

Although courses on campus are presently being offered, the new course content and upgrading will enable them to be "Internet ready" upon completion of a pilot program. In the summer of 2000, a program was instituted to field-test each course. Two professional practitioners worked on each course to do selected projects, read the textbooks, respond to all course requirements, and offer any suggestions to improve the program. Their feedback will enable me to modify the program and make any changes before offering courses on the Internet in the fall semester of 2000. Extensive updating of each course will be necessary, on a semester-by-semester basis, to keep content current and upgraded and continue to meet new demands of the information age. The field-testing will help ensure the quality and practicability of each offering. Thanks to financial help from Nancy Franklin, Director of Distance Education and Faculty Development, funds were made available for the pilot program.

One comment often heard is the lack of interaction among course participants enrolled in online courses. To alleviate this, I will construct a distribution list and a listserv. Students will place some of their projects on the listserv and other students enrolled in the course will comment and evaluate them. Results will be submitted to me to judge accordingly; therefore, this will eliminate personally grading all projects from each course. Also, class members will work together on various projects in a team effort to facilitate interaction among the participants. Further, questions will be placed on the listserv to elicit responses.

With the overwhelming number of vacant positions in both areas, such a program is needed in the United States. Inquires have been fielded from Baltimore, Syracuse, Savannah, Seattle, Germany, and Rabat, Morocco. When asked about programs in those areas, respondents stated none are available at the undergraduate level. One of our first program graduates had 40 job offers though the ISU Career Center. An article in the October 10th edition (1999) of *The Washington Post* calls attention to the fact that it is a "struggle" to find school library personnel. It is not uncommon for positions to remain open for a year or two due to the lack of qualified people. One public library director mentioned that in the past, when a position was advertised, 40 to 50 applications would be received. Presently, only nine or ten might apply and she felt fortunate if even one was qualified. The October, 1999 issue of *Infocus*, an Indiana Library Federation publication, states that presently there are more library job openings than anytime in history.

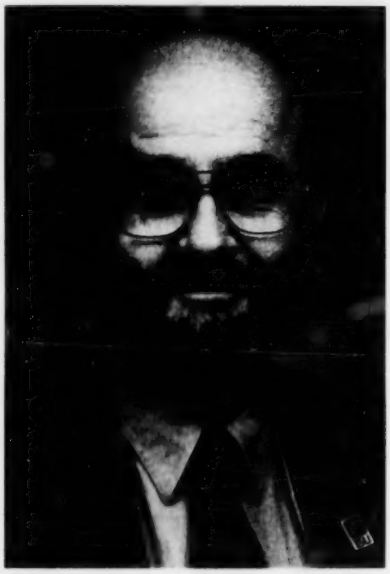
Courses can be viewed by visiting the Library/Media Services Program Web site at http://isu.indstate.edu/libraryprogram/ So the initial load will not be overwhelming, only one-half of the program will be available during the fall semester of 2000 with the remaining courses added for the spring of 2001. After that, hopefully the entire program will be offered every semester.

For their efforts that made this monumental venture possible, I thank Rose Ann Toulson, Dr. David Gilman, Joann Yang, Sharon Guan, and the CIMT committee of Drs. Robert George, Janice Hall, Susan Powers, Jerry Summers, and James Thompson. Special thanks go to my wife Alice, who spent hundreds of hours helping develop this program. Each has contributed to the success of this endeavor. My appreciation is extended to all for their generous support.

No students on campus? For hundreds of years teachers have stood in front of classes teaching. Education must think in different paradigms. This is one program that does. Advantages, yes; disadvantages, yes.

Unique to the United States? With e-mail messages and phone calls arriving from throughout the United States and international countries, I believe it is.

School of Health and Human Performance



Steve Gabany, Ph.D.
Professor of Community Health

Courses

- Community Health Concepts
- Research Methods in Health and Safety
- Community Health Practices
- Program Evaluation
- Research Methodology in Health and Safety

What's Next? A "Natural" Evolution of Web Course Design Sophistication

This paper will: demonstrate what I believe to be a natural design evolution of online courses that faculty should anticipate; suggest how mainstream faculty can develop their own Web course; and describe some of the mistakes I made and the successes I nonetheless realized in developing and offering five Web courses.

The Evolution of Design Sophistication

First, look at brief examples of how my first four courses evolved between their first and current versions. I think you cannot miss a progression of design sophistication. In fact, I think that my fourth course is an example of over-design. My fifth course is a combination of Web and television. Note that I do all my own Web work.

Current versions of the five courses that I will be discussing can be accessed from my home page at http://isu.indstate.edu/gabanys

Progression

My first Health and Safety course, Community Health Concepts (HLTH 221), relied heavily—perhaps too heavily—on images and external links. (You can browse this version of HLTH 221 at http://isu.indstate.edu/gabanys/tohe/221oldhome.htm) My overriding concern was that I was going to bore students by loading the screen with page after page of text. By the second lesson, when I began discussing public funding, I started using tables, and came to appreciate their flexibility and power. While I still tried to include some clip art, I varied row and column background colors in my tables in an effort to spice up the pages.

My second course, Research Methods in Health and Safety (HLTH 341), used some graphic images, but did not link students to any external sites. (You can browse this version of HLTH 341 at http://isu.indstate.edu/gabanys/tohe/341oldhome.htm) Because I was not able to find a flowcharting program that produced the quality of images I wanted to use, I settled for tables and internal links to at least partly emulate my flowchart/decision tree approach to the course.

Earlier iterations of the first two courses used a full-page, non-frames format. That is, my text flowed from one margin to the other. By the time I began developing my third course, I had become bored with this design and, coincidentally, discovered the concept of using a table as a margin. This, then, became the format of my third course Community Health Practices (HLTH 380). (You can browse this version of HLTH 380 at http://isu.indstate.edu/gabanys/tohe/380oldhome.htm)

Although I was not a fan of frames when I began my development efforts, and am still somewhat ambivalent about them, I used them in conjunction with JavaScript in my fourth course to address a number of design and pedagogical limitations including:

- I did not like the fact that my menu would scroll off the screen;
- I came to question why I needed my course logo on every page;
- I felt the need to test whether students were attending to the Web material; and,
- I wanted to re-use but improve upon the flowchart approach used in my second course.

These were the primary factors that led me to the design of my fourth Web course—Program Evaluation (HLTH 428). (You can browse this version of HLTH 428 at http://isu.indstate.edu/gabanys/tohe/428start.htm) In addition to JavaScript, the design makes intensive use of forms to control page flow. However, students who have not had a Web course have much more difficulty with my fourth course than those who are enrolled in my first course. Moreover, even experienced students are not overawed at my lovely design, finding the course difficult to navigate.

As I was exploring various designs for my third and especially my fourth course, I found it is easy to stare wistfully at some Web sites and wonder, "How'd they do that?" and "How

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can I do that?" I am convinced that anyone who has successfully authored a first Web course will want to improve on the second, and then go back and modify his or her rather primitive first effort. That is certainly what I did, as you can see if you look at current versions of my courses, accessible at the following sites:

- Community Health Concepts (HLTH 221)
  http://isu.indstate.edu/gabanys/tohe/221newstart.htm
- Research Methods in Health and Safety (HLTH 341)
  http://isu.indstate.edu/gabanys/tohe/341newstart.htm
- Community Health Practices (HLTH 380)
  http://isu.indstate.edu/gabanys/tohe/380newstart.htm

As I use it, *improve* means incorporating more advanced Web design features such as frames, animated graphics, sound, and video. Many advanced features are supported through HTML. And, of course, JavaScript and other scripting languages offer additional, tempting capabilities. For example, MouseOver can be used to change one image to another when the user passes over it with the mouse. This can be visually interesting. And, scripting languages permit the designer to use a form to control page flow. Dynamic HTML and style sheets make on-the-fly modifications very easy.

These are not only seductive enhancements to faculty who design their own Web courses, they also represent an intellectual challenge and the acquisition of new knowledge as well. I suggest that faculty who find their first Web course experience to be positive will want to increase the sophistication of their second course. However, there are two potential dangers inherent in using advanced Web features:

- Mastering basic HTML is relatively simple since there are less than two dozen common commands or tags. Embarking on, say, JavaScript, without solid HTML knowledge and experience, however, can result in considerable frustration. While faculty might find ample on-campus support for basic HTML issues, there will be increasingly less help as they begin exploring the newer, more advanced, and unfamiliar features. As a result, an all-consuming quest to resolve one technical issue can seriously detract from reaching the primary development goal. For example, navigating between and among frames with JavaScript is one of its major strengths and basic appeals. However, what if you want to disable or freeze your menu frame while you force students to complete a one-question Web page quiz? This turns out to be reasonably complicated. It is easy to lose precious development hours seeking such solutions.
- Only newer browsers can support newer features. Universities may upgrade their browser software regularly; however, individual students and places where distance students might go to access the Web may have neither the latest browser nor the computing power necessary to support the latest browser. For instance, the number of public libraries in my state that provide Internet access continues to increase. However, libraries are fortunate if they have Pentium processors, to say nothing of Netscape Communicator 4.0. As a result, it is easy to outstrip the capabilities of older computers and browsers. See *Lowest Common Denominator*.

What Should You Do?

You should:

- develop Web courses;
- develop them within your own capabilities;
- avoid succumbing to the romance of technology; and,
- remember that distance education students are often technologically limited.

A course limited to in-line graphics, tables, and external links can be very effective. Few of us need, as opposed to want, extras such as frames, animated graphics, audio, and video clips; moreover, older browsers do not support them. Still, like other technologies, browser capabilities continue to increase, and diffusion of those capabilities does as well. I suspect that most faculties want to push the envelope. Unlike its in-class counterpart, however, Web faculty cannot be sure that their students—off-campus ones, in particular—will be able to hear the advanced bells and whistles associated with the Web lesson.

A Development Model

I have identified five major steps in developing an online course. Faculty who are looking into Web courses may find them useful:

Meditate: This is a thinking step. The effort required to develop an online course is much greater than that required for in-class delivery. Think before you jump, and ask yourself the following questions:

- Why bother? Can you identify a particular audience, perhaps place-bound students, that you need to reach? Or, do you just think it would be fun?
- How do you like to teach? What is your preferred teaching style? What distance education delivery method best matches your teaching style? The Internet may not satisfy you.
- How much do you like computers? You have to spend lots of time on the computer developing and maintaining the course, and interacting with students.
- Are you relatively self-sufficient? You should be prepared to develop your material largely by yourself.
- How much time do you have to develop your course? Plan to take a year.
- Can you devote big blocks of time to the project? Learning HTML is easy. Designing a simple Web page is not difficult. But, it takes lots of time to find appropriate links and graphics. You cannot conduct those searches in 15-minute increments.
- Can you adapt to the your campus' distance education environment? Your institution may not place a high priority on distance education. If not, can you cope?

For helpful resources, visit the University of Texas World Lecture Hall at http://utexas.edu/world/lecture/index.html This site includes links to hundreds of courses.

Look Ahead: This is where you begin putting yourself in a distributed education, online frame of mind. Some suggestions:

- Use the Web as an adjunct to, not a substitution for, your textbook unless you have an online text. Make your online lessons supplement the text.

• Think in terms of student learning, not instructor teaching. An asynchronous course demands independent learning. Quizzes, tests, discussions, and assignments can all be done through e-mail, chat, and listservs. Due dates can be established. But, as students in your regular class will or will not study the textbook so, too, Web students will or will not study your online pages.

• Adopt a distributed education approach to your course. Is it a good idea to allow off-campus students to complete your course on their schedule? Or, should you expect them to adhere to the same deadlines and interact with other on- and off-campus members of the class just as if they were on-campus?

• Strive for a paperless class. Put your outline, syllabus, and grading policy on the Web. Use e-mail or chat for assignments and quizzes. Web forms can be developed for those who use objective tests, and online quiz software is available in both stand-alone and, increasingly, from textbook publishers.

Make Ready: This is the stage at which you organize your time, hardware, and software. Here are some desirable goals:

• Try to get release time from your department or school/college to develop your course. You will spend the equivalent of half of your time for one year developing your course if you do it alone.

• Connect to your campus computer from home. Unless you have a **very** light teaching schedule, there are too many interruptions to develop an online course at work. You will need to organize your home life to be able to devote large blocks of time to the task.

• Get the fastest modem supported by your campus. Put a second phone line in your house and hook your modem to it. Organize your e-mail into folders. In addition, I recommend the following tools and resources:

- Netscape for your home and office
- McFedries' *Complete Idiot's Guide to Creating an HTML 4 Web Page* (3rd ed.), Indianapolis, Que
- An authoring tool such as HTML Writer, a great little, freeware package. It is free and affords you complete control over your Web page; but, you'll have to learn HTML. For information, visit http://gopher.hku.hk.cc/document/htmlwrit.html)
- A File Transfer Program (FTP) such as CuteFTP, a simple to use shareware package that enables you to upload your files to your server. For information, visit http://www.cuteftp.com/index.html
- Color Slider, a nice little freeware program that lets you select colors and save the code directly to the clip board. This program is free and easy to use. However, colors do not always seem to match when displayed on the browser. For information, visit http://www.geocites.com/Area51/Vault/6377/colslide.html
- ColorServe Java, a Web page that lets you pick colors and displays the resulting Hex code. You do not have to take up disk space with another software package; however, to test your page, you either have to jump back and forward, or open two browser windows. For information, visit http://www-students.biola.edu/~brian/csapplet.html

• Develop your outline. Include pages for your course syllabus, grading policy, due dates, and a table of contents for your course. Include instructions on how off-campus students can enroll in your course.

• If you are going to dial in to your campus computer from home, find out if you have a time out or connect limit. The first stipulates how long you can not interact with your campus computer before it disconnects you. The second stipulates the total session time you can be logged on to your campus computer. You will need long periods of connect time.

Produce: Finally, you start writing HTML! Here are some considerations:

• Development and maintenance costs of an online course for academic departments are zero. Once developed, implementing an online course costs academic departments nothing. If paper expenses are minimized, a Web course will cost less to support than an in-class course.

• Treat everything on the Web as copyrighted unless the person who maintains the page specifically tells you otherwise. Use links to graphics. This probably avoids copyright problems, and saves you and the campus disk space. But, Web sites change, and links and graphics disappear. Check links regularly.

• Create a local file structure that mirrors your Web directory structure to ease up- and downloading.

• Create a **boilerplate page** that contains headers, footers, and background information, or if you are sure your students' browsers can support them—style sheets. Either will help ensure a consistent look and will make it easier for you to concentrate on content.

• Keep your Web pages short. The more graphics you include, the longer it will take your page to download. Put some text at the top of the page so students have something to read while graphics are downloading.

• Try to find long-lasting links to other sites and graphics. The life expectancy of personal Web pages may be increasing, but you will be in it for the long haul. Check links regularly.

• Keep your pages simple. Students' browsers may not support advanced features.

• Put a title on each Web page. It will show up at the top of the browser and will eventually find its way into the Internet search engines.

• Maintain a consistent look throughout. Changing the layout or the background color is distracting.

• Put *Go To* links at the top and bottom of each page, or use a menu frame. It is a miserable experience to get to the bottom of a Web page only to have to scroll to the top in order to go anywhere except the next page.

• Be sure to include *Home, Table of Contents,* and *E-mail* links in your *Go To* section.

• Include a way for students to get to the next page at the end of the page.

• Avoid blinking text!

• Images:

- Include *Alt Text* as part of your image HTML code. If the Internet cannot find your image, students will at least be able to tell what it was supposed to be. Since

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many images do not have meaningful file names, without *Alt Text*, **you** may not be able to identify it either.
- Include *Align* in your image code. Without *Align*, text sometimes does not flow properly around the image, although you can put an image in a table and avoid the wrap problem.
- Use *Width and Height* commands, in pixels, to control image size. If you view an image with your Web browser, you will see its width and height at the top of the page. Experiment to get a feel for how many pixels take up how much of your screen.

Continued Care and Feeding: You obviously cannot just write it and forget it. Here are some tips:

• Get access to your Web server and set up your directories and subdirectories. Use FTP to upload your files. Try the site out before the term starts. Run through your lessons during the semester break. Are any links broken? Are the images still downloading?

• Start thinking about your next site!

The On-Line Challenge

Organizing and teaching a Web course is very different than either on-site or televised instruction. Televised delivery affords the instructor almost complete freedom concerning lesson content. What I did not anticipate, and perhaps could not have anticipated, was that after I established the theme of an individual Web lesson, I was either going to fill the screen with text or find myself completely at the mercy of what information I could find on the Web. I either had to re-think my lectures, based on existing sites and graphics, or use the Web as an expensive way to distribute my lecture notes.

For most of us who develop a fairly immutable pedagogical set, it might be easier to organize a **new** Web course than convert an existing one.

My Mistakes

I did not spend enough time determining which delivery method best matched my preferred teaching style. I spent too much time worrying about what delivery method would reach the greatest number of students. This caused me to go in three different directions—text-based correspondence, televised instruction, and the Web. Try not to do that.

I am largely ignorant about graphic design. I should have been more persistent in seeking help. Because I did not, I continued to modify the basic page design of my first two courses well into the authoring process. Each time I made a basic design change, I had to edit each file. Remember, this was before style sheets! Spend a lot of time deciding how you want your page to look before you start writing content.

I did not organize my Netscape bookmarks into folders early enough. Because I wanted to spend my time developing Web pages rather than organizing bookmarks, the eventual effort was more difficult than it needed to be. Create folders on every conceivable topic and subtopic, and organize your bookmarks early on!

I did not pay enough attention to a number of the suggested HTML conventions. For instance, many authors recommend including width and height attributes in image tags. As I began considering the use of frames, I found that the absence of width and height could cause browser havoc. As I have done more than once, I expended considerably more effort to edit these into my Web pages than it would have taken me to include them in the first place. Try not to make this kind of mistake.

My perception of students' computing expertise greatly exceeded reality. Most of them had spent little time surfing the Web before they enrolled in my course. An online help manual is of no value to Web-illiterate students since they do not know how to access it!

As an experienced user of electronic mail, I assumed I would have little difficulty grading and responding to e-mailed assignments. However, the limitations of Pegasus, our e-mail software, make correcting grammar, spelling, and sentence construction virtually impossible without a complete rewrite. And, of course, I can no longer make notes in the margin, redline, or use a caret to insert a word or a phrase.

Depending upon how you intend to communicate with your students, you may need to be prepared to be tethered closely to your computer.

My Successes

Students' responses to my Web courses have been positive. Web courses and the use of the Web for other classes have prompted a number of students to get a computer. This past semester, a number of them completed their Web work from home.

Students seem to spend about the same amount of time online as they would in the classroom—an average of three hours a week studying the textbook, and four hours per week completing the Web lessons. Although not having an easy way to correct their writing is frustrating, I find the quality of the content of their assignments to be no different than that of in-class students. Finally, class discussion seems to have been facilitated rather than hampered by the listserv.

Continuing Issues

Students know when assignments are due, and like being able to complete the online lessons at their leisure. Some procrastinate. I think they would be on-site procrastinators. However, as the semester proceeds, all students find it increasingly difficult to find an open computer in the laboratories. I believe campuses will soon have to confront the challenge of ensuring that students have personal access to the Internet from their residence.

Equipment failure and browser differences will continue to plague online faculty. We cannot assume that all students will have access to Netscape Communicator 4.6, or Internet Explorer 5.0. For my first three courses, my strategy was to write HTML for the lowest common denominator browser. However, I became bored with plain vanilla Web courses, and wanted to increase the sophistication of my design. But, I know that as I add features—such as sound and video—the risk of limiting student access increases.

Students report appreciation at having been forced to learn computing and use of the Internet. Repeatedly, they note that

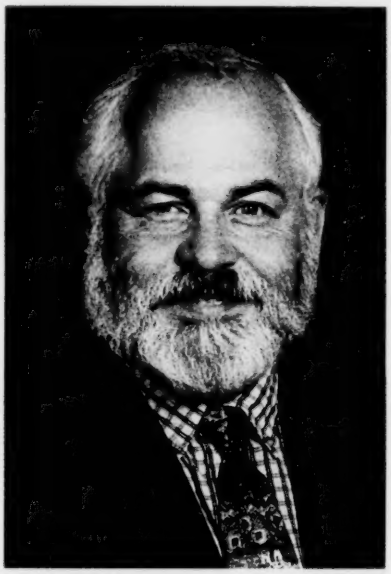
this experience has helped them complete assignments for other classes.

Students also like the fact that they do not have to listen to boring (their word!) lectures. But, they miss the face-to-face interaction with other students. Chat may help, as will live audio and video.

References

McFedries, P. (1997). *The Complete Idiot's Guide to Creating an HTML 4 Web Page* (3rd ed.). Indianapolis, Que.

School of Health and Human Performance



Thomas Sawyer, Ed.D.
Professor of Physical Education, and
Recreation and Sport Management

Courses

- Recreation and Sport Facility Development and Management
- Human Relations and Communication in Recreation and Sport Management
- Financial Management and Development in Recreation and Sport
- Law of Recreation and Sport
- Marketing for Recreation and Sport
- Aquatic Facility Development and Management
- Management of Recreational Sports in Higher Education
- Recreation and Sport Management Seminar
- Health, Fitness, and Sport Club Management

Experiences in Distance Education: The Beginning

Distance education began for me during the summer of 1990. That summer was devoted to designing Foundations of Conditioning, a correspondence study course which is taken by students primarily from two departments—Athletic Training and Physical Education. Since that initial exposure, I have developed six additional undergraduate correspondence courses. In the near future, these courses will be available as either correspondence or Internet courses.

Course Transformation—from Traditional to Online

Most recently, because of the technology expansion and my comfort with the available technology, I have developed seven online courses in recreation and sport management that I hope will be offered worldwide as part of an online recreation and sport management master's degree program. Currently, this master of arts/master of science program is offered only on campus; in the future, my hope is that this program will be offered off campus through the Internet. The on-campus offerings each semester would not be the same as those offered online. Initially, the targeted audience would include distance learners in Japan, Malaysia, South Korea, Thailand, and Greece.

Development of Internet courses would not have been possible without the valuable information gathered while attending the Course Transformation Academy (CTA). The CTA opened my eyes to new and different ways to present courses to students. As a CTA participant, I was exposed to numerous ways to design a course, and the various technologies available including: online or Web-based; one-way video, two-way audio; two-way video, two-way audio; conference calling through a telephone bridge to 50 or more students; audio clips; video clips; and much more. I met the course development team members, from course designers to graphic specialists to technology experts.

Additionally, the assistance available to me, just for the asking, from course designers, graphic specialists, and technology experts, has made course transformation much easier. It is challenging to transform a traditional course to an Internet course. However, there is an assistance network available, at no cost to ISU faculty members or their departments, to assist in the transformation of a course.

Currently, the courses I have developed are designed for asynchronous delivery. This format is necessary because our primary audience is international. Further, the students involved with distance education programming are dedicated students who want to earn a degree but are faced with some difficult hurdles. These students, for the most part, are place-bound, time-bound, and financially challenged.

My courses use the following technologies: PowerPoint, a listserv, a discussion board, and external links. In the future, each course will include some audio and video clips when the technology on the student's end can handle the advances. A major concern for a course designer is determining the student's hardware and software capabilities at the home site. The courses have been developed so that a student with a 486 computer, with 16 MB of RAM and a 28.8 modem, can easily gain access to the course. As audio and video clips are added in the future, the student's hardware capabilities must be greater.

Over the next 12 months, I will expand my courses. The number of course documents will be increased as well as the number of external links. Further, I will use the discussion board more frequently.

The courseware program chosen for developing Internet courses is CourseInfo, a user-friendly piece of software that

makes course modifications easy. Using this program, I do not need to know HTML; it is done for me automatically as I type. Students find the CourseInfo site easy to navigate.

Student Evaluations

Thus far, my students' evaluations have been very encouraging. The following is a summary of their comments:

"I liked taking this course. It was very convenient; I did not have to even leave my house."

"I commonly did my lessons and projects after getting off work at 1:00 a.m. in the morning. It was great!"

"I work nights and sleep all day, so it was convenient for me to do my assignments when I got off work at 5:00 a.m."

"I was a full-time student last semester but had to return to Thailand because of family problems. I did not have to give up my studies because of the availability of Internet courses. So when I return next semester I will not be behind."

"I could not have enough money to come to the United States to study. So it is nice to be able to take this course on the Internet."

Course URLs

The following are Web addresses for my Internet courses:

- Recreation and Sport Facility Development and Management
  http://online.indstate.edu/courses/RCSM620
- Human Relations and Communication in Recreation and Sport Management
  http://online.indstate.edu/courses/RCSM621
- Financial Management and Development in Recreation and Sport
  http://online.indstate.edu/courses/RCSM622
- Law of Recreation and Sport
  http://online.indstate.edu/courses/RCSM623
- Marketing for Recreation and Sport
  http://online.indstate.edu/courses/RCSM 624
- Aquatic Facility Development and Management
  http://online.indstate.edu/courses/RCSM625
- Management of Recreational Sports in Higher Education
  http://online.indstate.edu/courses/RCSM627
- Recreation and Sport Management Seminar
  http://online.indstate.edu/courses/RCSM628
- Health, Fitness, and Sport Club Management
  http://online.indstate.edu/courses/RCSM630

In addition, I am developing two graduate courses which should be completed by summer 2000: Research and Recreation in Sport Management (RCSM 604) and Computer Applications in Recreation and Sport Management (RCSM 610).

The Professorate and Distance Education

The role of the professor is being modified by distance education. The professor will no longer be a custodian of knowledge but rather a facilitator who acts as a catalyst in the process of learning. He/she will provide direction for learning but no longer teach the facts nor transmit information. The focus will be on learning not teaching. The professor will communicate with students over the Internet rather than in the office or by telephone. Finally, the professor will spend more time in one-on-one (but not eye-to-eye) conversations with students.

The Challenges and Rewards

The greatest challenge for me was carving out enough time to transform the courses in a timely fashion. The transformation was not hard work but it was time consuming. The greatest reward from the process was learning how to communicate a different way to students and see them grow using this new methodology. I was skeptical at first but have learned through experience that the Internet can be a very valuable education tool. It opens many doors that once were locked for the place-bound, time-bound, and financially challenged student. These students are as important to society as the traditional students found on campus.

Practical Tips

The following are few practical tips for the beginner in distance education:

- Be patient.
- Be organized.
- Be willing to be part of an educational team on which you are the content expert and the course designer, graphics specialists, and technology expert work with you to develop the final product—your Web-based course.
- Learn to be comfortable with the computer.
- Learn to use, and feel comfortable with, e-mail.
- Accept the fact that your role as a professor will change from a person professing facts to one who directs the student to the facts and information.
- Be prepared to communicate regularly with students through e-mail at all hours of the day and night.

A Final Thought

Distance education will never replace the traditional classroom or the on-campus higher education experience. But distance education will:

- change higher education dramatically,
- make higher education accessible to a whole new population of learners of all ages,
- modify the traditional classroom pedagogy, and
- have an increasingly greater impact on how we teach and learn.

Distance education is here to stay. It is not a fad.

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School of Nursing

Esther Acree, M.S.N.
Associate Professor of Nursing

Courses

- Comprehensive Health Assessment of Individuals
- Nursing Assessment Across the Lifespan

Going the Distance

It has been a rewarding as well as a personal learning experience for me to develop Internet portions for my existing courses in Indiana State University's Baccalaureate Nursing Program. I view turning an on-campus course into a distance education course to be similar to the experience that the character Hercules, in the Disney video by the same name, faced to "go the distance." Only by going the distance does Hercules, our hero, become a god and accomplish his task. So, just as Hercules had a "teacher of heroes" to help him, I hope to guide my students, via two-way video and the Internet, toward success in basic health assessment of clients across the lifespan.

I was familiar with the needed lecture/discussion components to accomplish the learning goals for the content, and the clinical practice necessary to become competent in the skills of assessment. I believed in my ability to role model to the students for the on-campus clinicals. I also was familiar with the clinical objectives that reflect student growth in planned clinicals with real clients. I now had to rely on my students for increased self-direction in utilizing the supplemental material, links, and other resources that the Internet would bring to them. I had to rely on preceptors prepared in health assessment skills to ensure the competence in practice. I had to let go. I had to hope previous lessons learned would work. "Oh, teacher of heroes!"

I did have a partner in this process—my colleague Sheila Rangel. She helped me organize the site over the summer and consider the increased work necessary to make the course a success. Sheila maintained a cool, calm attitude when things went wrong. It truly has been the mistakes that are inspiring us to have new ideas for course improvement. We are working on taking the glitches and turning them into adventures and learning for us. We are keeping up and updating our knowledge through the Course Transformation Academy and other workshops—important "ups" for us.

To assist our students, we are working on "helps" and other aids to reduce the time utilized to access the Web site. We are "going the distance" in this new realm of teaching, and liking it.

In closing, I feel we are empowering our novice "heroes" with more learning tools. Learning is never ending in nursing; maybe we have touched the beginning of our "Mount Olympus."

which students could use to see their grades but no one else's. I decided I just had to find a way to incorporate these into my new class without having to learn how to get CourseInfo to do what I wanted it to do.

Julie Fine, another nursing professor interested in Web design, referred me to a neat little quiz maker program called Hot Potatoes, which is also free. That program allowed me to attach practice quizzes of various formats to my lecture notes. Then, despite my belief that I did not need any assistance, I was assigned an instructional designer—Sharon Guan. Sharon looked over what I already had started, told me that it was basically good, and then told me what was wrong. She worked through many of the lessons and found problem spots. She then pointed me in the direction of people who could do things like CGI scripting and WebGrades, which is a nice Web grade book for those of us who do not want to use a package such as CourseInfo.

Sharon also looked beyond just the technical design piece and gave me feedback on the course content as well. She thought my content was aimed too high—more graduate than undergraduate level. I ignored this piece of advice because I have always wanted my students to know more about research than they do at the undergraduate level. I had not taught the course yet. After teaching the class this semester, and hearing the same comments come from the students and my department chairperson, I decided that they all might be right. The content level was too high. I have had to skip some assignments, such as power analysis, and re-order some of the content. But it has not been a total loss. Next semester I will teach Nursing Research (NURS 633), a course that I have wanted to teach for years. (No, I did not plan it this way; shame on you for thinking that!) I am also going to add an hour of two-way video each week for discussions, just to see how it goes.

Some Things I Have Learned

• **Web courses are not static; they evolve over time.** I add things to my site every week—sometimes every day. This evolution occurs because I keep finding new and relevant links, and because existing links to online resources either move or disappear. Don't count too heavily on any one external link; you never know when it could evaporate, leaving you with a hole in your content.

• **Don't be afraid to experiment and ask for help when you need it.** Based on student feedback, you should be able to change your course in the middle of the semester if things are not working or if you find a better way to accomplish something. Talk with the experts on campus and on the Web; there may be a new toy out there that will solve whatever problem you have come up against.

• **Form follows function.** Don't add pop-ups or pull-down menus or mouse-overs or flashing lights or sounds or wild backgrounds—unless it helps you make your point. Judicious use of graphics is fine, but don't let the sound and light show detract from the content. If the students cannot read the material or cannot get the page to load in a reasonable time, then you've lost the point. Also, you should view your page from a wide variety of monitors. Something that looks good on your desktop may not be very readable on another monitor.

• **Use the lowest level of technology you can to do what you are trying to do.** Don't use Java Script if you can to the same basic thing in HTML. Remember, the more bells and whistles, the more likely parts of your page will not run on a student's older home computer.

• **Make pages that are printer friendly.** I find that the majority of my students print the lecture notes from the Web to study. When this is the case, you need to beware of multiple links and pages for the lecture content. It is best if you can include all the content for a lecture on one page, and use links for outside resources, quizzes, and assignments—not for content.

• **Watch out for color.** I color-coded my lecture notes on the Web because I thought my students would know what the important points were. However, most did not print out the notes on color printers and therefore did not see the color-coding. As more students get color printers, this may become a more helpful technique; for now, changing the font size would have been more helpful.

• **Time, Time, Time.** It has been my experience that the amount of time needed to really get an Internet course up and running is about three times what it takes for standard course development. After you get the course mounted, you need to count on about two hours per week for Web page maintenance during the first semester. Thereafter, you can probably cut it to about an hour a week if you don't make any major changes to your design. This is in addition to the time you spend communicating with students via e-mail, grading papers, and grading assignments.

• **If you expect students to do something on the Web, do it yourself first.** Make sure you check out all the steps in the process before you send your students out to do it. You quickly will find some of the bugs in your course. Of course, you will not find them all, but at least you will find the ones that don't even work from an on-campus computer. If you are connected from home, be sure you try everything from your home computer. I have had things work perfectly in my office, only to be unable to access the resources from off campus.

•**Learn from the mistakes of others.** I have found a number of research courses on the Net since I started this process. They range from the fairly well done to the truly horrid. Sometimes it is hard to tell which is which unless you go down several layers in the course. I have found courses with great content, but with backgrounds and color schemes so wild that they are hard to look at for any length of time, let alone try to read. I have also found courses that look really professional on first glance, but the content is weak. When I find a course that covers essentially the same content that I intend to cover in a lecture, I put a link, at the end of my lecture, to that lecture so my students can see what other nursing students are studying.

My home page is located at http://web.indstate.edu/nurs/mary/mary.htm On my home page are links to my courses, tutorials, distance education resource page, and far too many other things. (I am going to have to clean house someday.) The distance education page has links to the quiz maker program, the Web grades material, and other "toys" that I have not had time to try yet. Feel free to e-mail me if you have any questions at m-bennett@indstate.edu

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School of Nursing

Mary Bennett, D.N.Sc.
Assistant Dean and
Assistant Professor of Nursing

Courses

- Nursing Care of the Adult I
- Research/Theoretical Basis for Nursing Practice

How I Ended Up with More Web Pages than I Know What to Do With

I do not remember exactly when this all started, but I do remember that it was Drs. David Prentice's, James Hughes', and Tim Mulkey's fault. I was minding my own business, happily teaching lectures using PowerPoint slides when I heard that these gentlemen from the Department of Life Sciences, who had put some or all of their lecture content on the Internet, were conducting a workshop to teach other faculty how to make Web pages. At the suggestion of my dean, we both signed up for the workshop. I made my first Web page during that hands-on session. It was really bad. I misspelled things (there was no spell check), did not know how to adjust the spacing, ended up with misplaced HTML characters showing, and, for some reason, my hair turned a strange blue-gray color when my picture was posted on the Internet. To top it all off, I did not understand how to mount the page and, even worse, could not remove it from the Internet. So this page remained active until I threw myself on the mercy of the Department of Life Sciences and they got rid of it for me.

None of this mattered because I was hooked. I saw so many possibilities for this format, if I could just learn how to use it. I knew I would be able to post my lecture notes on the Internet so my students could print them off and bring them to class instead of scribbling frantically trying to keep up with my slides. I could color-code my notes with points that I thought were most important. I could even post my graphics and slides for students to review at their own pace. I could do math tutorials to teach math for medication administration, an area we had no time for in class, but one which students always struggled with in the clinical setting. I could post practice quizzes so students could have an idea of what the tests would be like. All I had to do was to learn how to make a Web page.

Of course, this was back when you had to use HTML codes to make Web pages. Fortunately, I had help. The Faculty Computing Resource Center began sponsoring Web page workshops, and by the second workshop I was able to greatly improve on my first effort. By the time the first Course Transformation Academy (CTA) was offered, I already had a good start on a Web resource page for one course—Nursing Care of the Adult I (NURS 205). The CTA workshop introduced me to the ideas of planning and design, what works and what does not, and how to increase student interactions using a Web page. I even began to think about how to place an entire course on the Internet.

Since that time, my Nursing 205 Web page has become larger and more detailed. The page now has slide content, from all three of the instructors in the course, as well as math tutorials, an arterial blood gas tutorial, a tutorial on how to write an APA style paper, lots of practice quizzes, and links to support materials. The page has required lots of work, but it is really rewarding to have e-mail from nursing students in South Africa, or Korea, or Australia saying how much they appreciate my page. The math, APA, and fluid and electrolyte lecture sections have been particularly popular. The math tutorial was selected for the Study Web Award for Academic Excellence (fall 1999). Now, like a kid in a candy store, I am using the Internet to post everything, from my class notes to continuing education modules to Web course development materials to my research abstracts.

As of fall 1999, I moved on to a new class—Research/Theoretical Basis for Nursing Practice (NURS 322). This undergraduate nursing research class does not include a clinical component. Therefore, I could plan and design it as an asynchronous Internet class for distance students as well as a site providing online notes and resources for my on-campus students. This was new ground for me so I headed back to the CTA for more workshops; this time on using CourseInfo, a courseware program.

CourseInfo is easier than doing your own coding using an HTML editor or Netscape Composer, particularly for those with no prior experience. However, I found it rather slow and limiting. I had already figured out how to do most of what I wanted to do without CourseInfo, and I hated having to relearn how to do things that I already knew how to do. However, there were some really great features in CourseInfo that I did like, such as the self-grading quizzes and the gradebook,

School of Nursing

Dale Ann O'Neal, M.S.N.
Assistant Professor of Nursing

Course

- Group Process for Professional Nursing Practice

During the fall semester of 1997, the School of Nursing presented, to the University Curriculum and Academic Affairs Committee, a curriculum proposal that offered an alternative way for experienced registered nurses to obtain baccalaureate degrees. In 1998, the decision was made to offer the entire program via distance education and thus expand the opportunity for registered nurses to enhance their education. I will be teaching one course in this program—Group Process for Professional Nursing Practice (NURS 306)—for the first time in the spring semester via two-way video and also by Internet for those students who do not have access to V-Tel sites. Faculty members in the School of Nursing are well aware of my technological limitations, and I am sure had significant doubts about my ability to complete the challenge of creating a distance education course. Many of the faculty members clearly remember the day that I asked, "Who will come?" when eliciting the *Help* command on the computer.

I have attended several distance education workshops offered at Indiana State University to increase my knowledge, and I enrolled in the Course Transformation Academy (CTA) during the spring semester 1999 to acquire further skills. Currently, I am using Blackboard's CourseInfo as the structure for my course design and development. I have received excellent assistance and guidance from Nancy Franklin, RoseAnn Toulson, and also from faculty members Rhonda Reed, Dr. Betsy Frank, and Dr. Mary Bennett in the School of Nursing. I have been asked to describe my experiences in course development for distance education so I have selected one particular teaching strategy as the focus for this article. This strategy actually evolved out of the media project that I completed for the CTA requirement.

Students enrolling in the Baccalaureate Track for Registered Nurses are most likely to be adult learners between the ages of 25 and 55 years. They are generally experienced registered nurses, but are newly returned to school after years of clinical practice in a variety of health care settings. They are employed full-time and most of them have numerous family responsibilities. Prior to taking the Group Process Course, they have had only one semester to adapt to an academic institution following their years of work experience. Many of them have little or no understanding of computers. Interpersonally they often interact with clients, peers, and professors with unsophisticated, therapeutic communication techniques, and may lack awareness of their deficiencies or may not have the knowledge of alternative communication strategies available. They describe themselves as highly anxious about their academic success and overwhelmed with their overload of responsibilities.

Several of the instructional goals for the course were instrumental in directing the development of specific teaching strategies. I thought that it was important for students to obtain a higher level of knowledge regarding more sophisticated and advanced therapeutic communication techniques, to enhance their interpersonal relationship skills within the group setting, to select positive strategies for managing complex group problems, and to increase self awareness of their interpersonal verbal and nonverbal behavior. Through my two-way video and Internet course, students receive lecture content that reviews previously learned communication techniques and presents information regarding the more advanced therapeutic communication responses. Students also may participate in discussion groups in which they practice various responses with each other. In addition, I decided to create a series of video vignettes in which students are presented scenarios demonstrating obstacles or barriers to effective group process and are asked to identify correct responses that would facilitate more successful group outcomes.

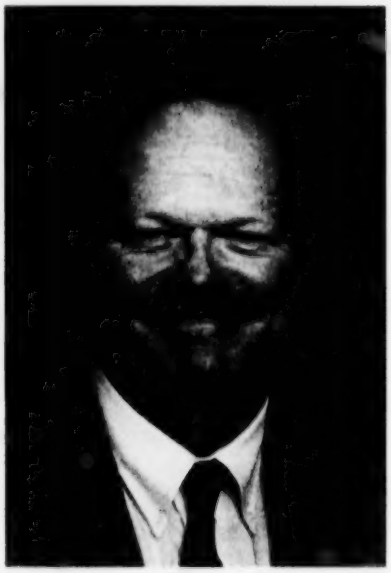
I wrote a very detailed script during the semester that I was enrolled in the Course Transformation Academy. Four scenarios are presented in which common group problems are portrayed by actors and actresses from the Department of Theater. The nursing students are asked to view each scenario, go to the Discussion Board and deliberate their observations with their peers, and suggest alternative strategies for resolving the group conflict or dilemma. After participating in the Group Discussion Board, the students are instructed to return to the video and compare their responses with the views of the expert narrator. After completing part one of the videotape, students have the opportunity to view part two, in which the actors and actresses have corrected the problems using solutions recommended by the narrator.

The CTA instructors requested a rapid prototype of the instructional video before completion of the final version. Using the paper script and live role-playing, I tested the project with nursing students who were currently enrolled in the on-campus Group Process Course. Twenty-two students provided feedback; their responses were used to revise the script for the media project. They indicated that the teaching strategy provided a lively learning activity which was creative, valuable, interesting, informative, and entertaining. Students stated that they were well prepared theoretically to identify both the group problems and strategies for intervention. In addition, they suggested that the videotape be shown to students early in the semester in order to provide a more solid foundation for completing course requirements, including writing an assigned manuscript. The students also were helpful in suggesting a few minor changes in the script to eliminate what they had perceived as gender bias.

In order to complete the video project for the course, I coordinated with Ron Prickel, video production manager, who reviewed the script I had written, directed the enactment of the script, coordinated filming activities, and conducted the actual filming of the production. Elaine Schaztline-Behr, Department of Theater, provided the actors and actresses by seeking student volunteers who were willing to participate in the video. Elaine made perfect choices in casting students for the appropriate roles. Clearly, these students had received quality education, preparation, and instructions from the Department of Theater. I truly appreciate the superior assistance that I received from Ron and Elaine, and I enjoyed collaborating on an interdisciplinary project which I believe will enhance the nursing students' understanding of group process theory and application. The video is currently being incorporated into the Internet course by Steve Hunter, a student designer from the Faculty Computer Resource Center.

Five years ago, in my wildest imagination, I would not have considered the possibility that I would be able to develop and deliver a course via distance education technologies. Although I continue to be limited in terms of technical abilities, I have found the resources on campus to be extremely valuable in helping me to overcome any barriers, which were mostly self-generated. I have really appreciated the opportunities for creative course development and for tapping a skill within me that I (and many others) had considered to be nonexistent.

School of Technology



Stephen Shure, M.A.
Assistant Professor of Aviation Technology

Courses

- Aviation Fundamentals
- Basic Air Navigation
- Advanced Navigation Systems
- Instrument/Commercial Theory I and II
- Advanced Aircraft Theory
- Flight Instructor Theory

From my point of view, this paper is not so much about innovation as it is perhaps the practical refinement and realignment of existing technologies. It might also be seen as something of a reality check as it relates to the use of some of the new technologies now available.

Several years have passed since I last wrote an article for *Sketches of Innovators in Education*. As may be expected, technology and my on-going experiences with it have changed and been modified. When I first began teaching televised aerospace courses over the Indiana Higher Education Telecommunications System (IHETS) more than six years ago, I knew it was going to be a good thing, but I never realized just how good. I had a feeling when I first started videotaping all of my courses that I probably would have a use for the tapes in the near future, so I retained a master copy of each. In the back of my mind, I had expectations of using these tapes in some form of distance education, but I was uncertain as to the vehicle or form I wanted to use at the time.

For the last year or so, I have watched and waited while many Internet courses went on and off-line. I have spoken to many of my colleagues and students who were involved on both ends of the process regarding their feelings about Web-based delivery. Some of the more common observations I gathered recently include the following:

- What I most often heard from those teaching was that Web-based courses took toomuch time. The courses were not cost-effective in terms of time spent per student taught. In fact, some of those I spoke with said never again.
- Students said many of the online courses they took were like an assigned readings course. Read this and write on that, with little if any communication, insight, or actual teaching on the part of the instructor. The students felt isolated and out-of-touch with any real people.
- Another comment was that the courses often lacked any real content. There was a framework and direction, but little material such as would be found in a "real lecture" taught by a "real" professor.
- Some of my distance students have mentioned that they would like to take some online courses, but simply do not have the funds to buy a thousand dollar home computer, or they are unable to find a computer to use at the time they need it. Most indicated they did, however, have a $50 VHS player.

I think, unfortunately, that many of us are somewhat insensitive to the fact that many distance students are in positions in which they have to work eight to 12 hours a day trying to make ends meet. Every dollar counts. These folks are trying very hard to improve their lot in life through higher education, by whatever means available, and sometimes the means cannot include an expensive home computer. So it is my position that we, as educators, should at least try to accommodate as many of them as possible by whatever means.

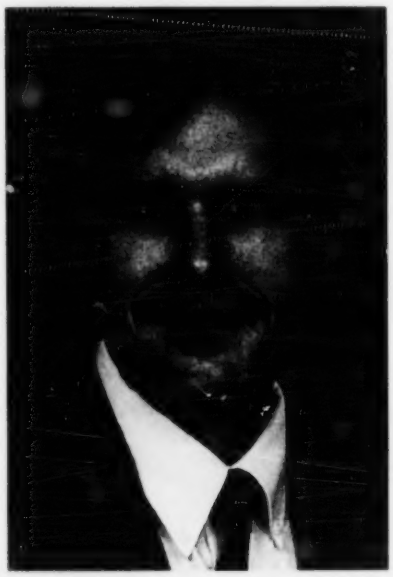
The point I am trying to make with all of this is that I want to blend the best of several worlds, including Internet, audio, videotapes, and classroom lecture, while avoiding some of the shortfalls mentioned above. What I envision is to be able to offer distance students the choice of taking any of my program courses, either by videotape and supplemental regular mail correspondence, or, if they choose, take the same course over the Internet, with videotapes providing the major course content. So as one can begin to see, the plan is to utilize the studio-taped classroom lectures for major course content and the Internet for tests, syllabus, necessary course updates, communication, direction, ad infinitum. The taped classroom lectures, I believe, will add some life, reality, and human connection to the courses in that the students can see and hear the instructor as well as communicate in real time by the Internet or telephone. Some courses, I believe, may be taught quite easily in a textual context; that is a student may be able to complete the course simply by reading and remembering/analyzing what he/she has read. Others courses, such as those we teach in the aviation sciences, do not lend themselves to a purely textual format. Graphics, photographs, charts, training aids, videotapes, and flight computer simulation are necessary for the learner to successfully complete these courses.

For this reason, I have decided to include a semester series of videotapes of courses from classroom lectures I taught on campus to our aviation students, with all of the accompanying computer flight simulation and graphics that our on-campus students receive.

Since I choose to believe an essential part of a university's mission is to serve all individuals who wish to receive an education, the available choices for delivery should include not just the traditional on-campus format, but all forms of distance education, including online courses, live television, videotapes, correspondence, and whatever else might develop in years to come.

Several years ago, I was able to gain approval from the Indiana Commission for Higher Education (CHE) for the distance delivery of our associate degree in general flight, and I am hoping to seek approval from the CHE for the distance delivery of our four-year degree in professional flight within the next year. One reason for seeking this approval is that all of the aerospace courses that make up the two-year associate degree in general flight, and all of the courses in our four-year baccalaureate program in professional flight, less three, are on videotape and thus ready for distance delivery. Again, the rationale for all of this is to allow place-bound students, in out of the way regions of Indiana and the rest of the world, the opportunity to acquire a truly outstanding foundational aviation education from Indiana State University.

School of Technology



Christopher Zirkle, Ph.D.

Assistant Professor of Industrial Technology Education

Courses

- Characteristics of Human Resource Development
- Adult Learning in Higher Education and Training

How do you teach a single course utilizing four concurrent delivery methods? That was the question I asked myself when the Department of Industrial Technology Education began offering the majority of its undergraduate and graduate human resource development and vocational-technical education courses using multiple delivery methods. In my first semester at Indiana State University (fall 1998), I had been given the luxury of teaching only on-campus courses, television courses offered through the Indiana Higher Education Television System (IHETS) network, and videotape courses, which are produced from tapes of my television lectures. However, with the department's commitment to DegreeLink, and recognizing that many students interested in the programs were non-traditional, time-bound, and place-bound, in the spring of 1999, the decision was made to add the Internet to our regular delivery methodology. At that time, as I began to visualize the impact multiple delivery formats would have on course components, my concerns began to multiply.

The first issue that surfaced was class participation. In my previous television/videotape course, I had required those students taking the course via videotape to submit weekly reaction sheets in which they answered a series of questions about the telecast. With the Internet students, through the discussion board and chat features provided by the CourseInfo software, I was able to create the opportunity for participation that I feel is integral to the success of any class. Both the videotape reaction sheets and the weekly discussion board postings I require of Internet students help provide a time structure similar to a regular course, which I find many non-traditional students utilize as a way to keep them on track. I also hold chat sessions periodically throughout the semester to get Internet classmates acquainted with each other.

One major issue I needed to address was how to transfer certain aspects of a traditional on-campus course to an Internet version. If a guest speaker gives a lecture in one of my classes, those in attendance or taking the course on videotape can benefit, but what about the Internet students? I could not ask my guest to also construct a PowerPoint presentation or a set of notes for these students. I was appreciative of the speaker's time visiting my class to begin with—I did not want to ask for more. Now, streaming technology has allowed me to upload the guest lecture to the course site for the Internet students to view. In addition, I am using this technology for student presentations. Internet students can make a videotape of themselves giving a presentation; the videotape can be placed on the course site for myself and members of the class to view.

I had heard all the horror stories of students at a distance collaborating on assignments, tests, and other course requirements. As I have never favored multiple-choice or true-false types of examinations, I do not believe this has been much of an issue. Since most of our graduates will be practitioners (teachers in secondary/postsecondary settings, or trainers in business and industry), my examinations have been application-oriented essay tests. These examinations do a much better job of assessing student knowledge and ability as it relates to our subject matter. When I do have a large group of students, either on campus or at a particular IHETS site, I distribute multiple versions of examinations, with different sets of questions. Other assignments are individualized to students' needs (with instructor approval). I believe this has helped restrict "community learning" to those occasions when it enhances course activities.

Another concern related to student assessment is timely feedback. With students submitting assignments in person, by fax, mail, and e-mail attachments, keeping student work filed and evaluated in an orderly manner can be difficult at times. I encourage all my students, even those on campus, to submit their work electronically, as a word processing attachment. I open their files in Microsoft Word and then use the *Track Changes* feature to edit, comment on, and grade their papers. I then send it back to them as a new file. This saves paper and postage costs for the department, has a quicker turnaround time than regular mail, and is highly reliable. Also, I can always send another copy if the assignment gets lost in cyberspace; the same cannot be said about regular mail.

I have settled into a routine with the classes I deliver utilizing multiple formats. I prepare for the week's on-campus/television/videotape class, teach the class, and then update the

Internet course site by adding notes, student comments, and other information. Just as I listen and respond to any on-campus/television student, I read the weekly postings on the Internet class discussion board and respond to students' questions, along with the questions that come to me via mail/e-mail from the students using videotape. Performing these tasks helps provide me with the structure I need to keep all my tasks organized.

Completing all these tasks presupposes I had the necessary computer skills to complete them. Before I came to ISU, most of my computer experience was through several years of teaching desktop publishing in a vocational-technical graphics arts program. I also had been a secondary school administrator with the benefit of a very talented secretary. So, while I was somewhat competent with Pagemaker and Microsoft Word, I knew nothing of HTML, computer networks, file transfer protocol (FTP), and several other areas of hardware and software that I needed to be successful at providing courses through multiple delivery formats.

Fortunately, ISU supports distance delivery through the Course Transformation Academy (CTA). I was an academy participant during the spring of 1999, and was able to develop the knowledge and skills needed to develop a course for a multiple delivery format. For me, the most beneficial aspect of the CTA was the opportunity to see what others on campus were doing with their distance education courses. This gave me a sense of "where the bar was" with respect to the many things I needed to do in order to produce a quality distance education course.

Another vital resource has been the Faculty Computing Resource Center (FCRC), which has some of the most talented students on this campus working there. I am constantly amazed at what the individuals in the FCRC are able to do, including streaming the guest lecture onto the Internet site that I mentioned earlier.

Despite all the challenges of delivering courses through the multiple delivery format, the benefits have far outweighed any possible disadvantages. First of all, it has made me a much better instructor. I have many students in my classes who have been in the workplace for several years, but lack a degree credential. These individuals are currently practicing what I am teaching in the classroom. It keeps me on my toes because I have to be current with the latest workplace trends, issues that classroom teachers face, legislative news, and a number of other topics that many of our working distance students are dealing with daily. This also benefits many of the younger, more traditional students, as they can get a clearer picture of what the real world is like from their classmates. It makes for some lively and productive classroom and chat room discussions.

Perhaps most significantly, I think of all the students we are helping. One student sent the comments, "I'm a single mother with two children. I've wanted to work on a degree to help me make a better life for my children and myself. The Internet courses are a Godsend." Another student, a gentleman from Kokomo, told me, "I'm 72 years old. They may have to carry me across the stage, but I'm going to get my diploma." If not for our efforts with initiatives like DegreeLink, and our ability to offer courses through multiple delivery, it is likely ISU would never have enrolled these students. Just as important for me, I would not have had the privilege to work with, and learn from, them.

Appendix A

The Student's Viewpoint

In January 2000, the Office of Distance Education and Faculty Development, Division of Lifelong Learning, distributed a survey to all students, including on-campus and distance learners, enrolled in distance learning courses offered during the fall 1999 semester at Indiana State University.

One of the purposes of this survey was to offer students a forum to express their opinions regarding the use of educational technologies in their courses. In reviewing the survey responses, several themes became apparent. For both on-campus and distance learners, the most commonly cited benefits associated with educational technologies included:

- Convenience
- Acquisition of technical skills needed in the workforce
- Quality of the course
- Self-paced structure
- Opportunity for remediation and review of difficult topics
- Access

The respondents' written comments were compiled into a new ISU publication, *The Student's Viewpoint*, excerpts of which follow. To request a copy of the publication, please contact Nancy Franklin, Director of Distance Education and Faculty Development, Division of Lifelong Learning, at 800-234-1639.

The Student's Viewpoint—Excerpts

Students were asked how they benefit from the use of educational technologies.

"My courses at ISU have taught me so much about technology by **forcing** me to use it. I need to use the satellite-delivered television because I live so far away from campus. I was so scared and unsure of myself in going back to school after more than 20 years, and then to have to try all this technology too was quite something to deal with! But, the professors guided me through the maze and gave me practice, and now I'm even able to pass the word along to others with confidence. I didn't even use the Internet before taking classes and now I use it every week. I'm still learning!"

— Mary Knarr
Graduate Student
Elementary Education Administration Certification Program
Kouts, IN

"Being a full time employee, working a second job, and being a widow, and raising two teenage sons, IHETS gives me the convenience that I need in order to pursue my graduate degree. The classes that I have taken have forced me to improve my use of the Internet as well as certain computer skills. I also like being able to take course notes from the Internet and have them to follow along in class. Since I do work in training, the courses that I have taken have been very beneficial. I could actually attend classes locally at either Ivy Tech State College or Indiana University-Kokomo, but not in HRD. I would have had to choose another field of study."

— Patsy Long
Graduate Student
Human Resource Development
Kokomo, IN

"I took a class via videotape. This was great for me because I could watch the lecture at my own convenience and in the comfort of my room. And if I had any problems or questions, the instructor was readily available to help out."

— Jason Mays
Undergraduate Student
Computer Hardware
Terre Haute, IN

"The PowerPoint lectures are an excellent way to organize the material and present it in a clear and concise manner."

— Kelly Sisson
Undergraduate Student
Psychology
Terre Haute, IN

"It is convenient to do the work at my own pace, fast or slow, and to be able to process difficult information more effectively. I believe that this better prepares me for the independently dependent responsibility at a work place that I would incur in the field of psychology and coaching."

— TaMarra Pitt
Undergraduate Student
Psychology/Coaching Education
Terre Haute, IN

"As a student I have been able to utilize "cutting edge" tools in order to prepare for my classes. Learning the ropes on obtaining research material from my own home has been the most beneficial aspect as an adult student with other responsibilities than just getting my degree. Being able to communicate quickly and accurately through e-mail also has been a plus, not only between my instructors, but also with fellow students. I feel better prepared for my future workplace with these skills in order.

— Melissa Bass
Undergraduate Student
Social Work
Clay City, IN

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"As a student who has worked my entire college experience, I have greatly enjoyed the opportunity of taking Web courses. They give me the opportunity to work at my own pace; many times it will be faster than in the classroom setting. The Internet courses allow the students to keep up technologically. Plus the ease of computers **all** over campus just allows the combined educational use on campus.

— Amy Larkin
Undergraduate Student
(Graduated December 1999)
Life Sciences
Terre Haute, IN

"Convenience is infused with practicality. I am able to learn and be educated with more convenience while at the same time using applications that I will one day be using in the business world. Also, by using these technologies, it breaks the monotony of the every day routine. It keeps learning fresh and fun."

— Andrew Pollom
Undergraduate Student
Criminology
Terre Haute, IN

In support of innovative teaching,
distance education, and
Indiana State University's
DegreeLink Program,
the Office of Distance Education
and Faculty Development,
Division of Lifelong Learning
offers this collection of faculty articles.

For information on the
University's Course Transformation
Academy or distance education
programs, contact the
Office of Distance Education,
Erickson Hall, room 241,
Terre Haute, Indiana 47809
or call 800-234-1639.

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